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ON THE COVER Army Colonel Lionel M. Nelson came out of retirement to serve as brigade flight surgeon with Task Force 449 at Camp Stryker in Baghdad. "The need for flight surgeons with experience is significant," he said. "The Army asked, and I volunteered."

*Photograph courtesy of
Lionel Nelson*



HOW TO REACH US

Yale Medicine welcomes news and commentary. Please send letters (350 words or fewer) and news items to *Yale Medicine*, 1 Church Street, Suite 300, New Haven, CT 06510, or via e-mail to ymm@yale.edu, and include a telephone number. Submissions may be edited for length, style, and content.

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Reactions to women in medicine

In her excellent essay on women in medicine in the Autumn 2010 issue of *Yale Medicine* ["Improving the lot of women in medicine"], Jill Max seems to lament that "Even in pediatrics or psychiatry, where women have accounted for half the field for more than 25 years, they have accounted for only about 10 percent of department chairs during the past decade." I read that to imply that everyone in academic medicine should strive to become a chair regardless of his or her primary interests or skills.

More than rarely, it has seemed to me that some faculty members advance beyond their original interests—and sometimes even their merits as an outstanding clinician or researcher—into running a department. That leads to a Rake's Progress, as I like to call it, of going on to become a dean or worse. It may be unfair to gripe that women have not in larger numbers chosen the administrative route: they may have preferred the one-on-one of caring for patients. I am sure the satisfactions of patient care outlast those of any administrator, given the usually abbreviated term of the latter.

Howard M. Spiro, M.D.
Professor Emeritus of Medicine
New Haven, Conn.

I was frankly astounded. I finished the nicely balanced article "Improving the lot of women in medicine" in the Autumn 2010 issue, impressed by the persistence of this issue

of undervaluing women in medicine. How can we have discussed it for so long and still be baffled for a solution? Then I went on to read the following article, "When medicine meets the business world," which features four photographs of business/medicine leaders. All four are men! Could not one photo be found of the successful female leaders mentioned in the article? Maybe I should not feel so baffled. As Pogo (Walt Kelly) said, "We have met the enemy and he is us."

Joseph Connors, M.D. '73
Vancouver, B.C.

Remembering Tom Forbes

When I returned to New Haven for the 45th reunion of the Medical School Class of 1965, my classmates immediately began entertaining each other with stories about Thomas Forbes, Ph.D., our kind and gentlemanly associate dean who strove to avoid any stress in his encounters with young people by preceding any possibly contrary comment with a nervous little cough. So many of us had so many kind things to say about him that it was easy for me to pitch in with my short tale:

It was the winter of 1960 when I came to New Haven to be interviewed for the next medical class. A motherly secretary ushered me into the handsome office of Dr. Forbes, who immediately put me at my ease with his kind smile, two-handed handshake, and comfortable slouching in his leather chair. We chatted amiably about this and that until finally he asked, "Uh, Mr. Barchilon, can you think of anybody at Yale that you particularly admire?"

"Cole Porter!" I answered immediately.

Tom Forbes leaned back and paused a moment. "Ahem, uh, Mr. Barchilon, I meant from the medical school." He paused again a moment, then leaned forward with a smile. "But come to think of it, he's my favorite, too."

That pretty well clinched Yale for me, especially after the adrenaline-rush interviews I had had at Columbia and Johns Hopkins. I felt comfortable at Yale and have always been proud to have learned the art of medicine there.

John Barchilon, M.D. '65
Thousand Oaks, Calif.

A "phantom" in the Class of '72

I was pleased to read in *Yale Medicine* that Donald Berwick, M.D., was the Commencement speaker last year. The article reminded me that Don was considered a phantom member of our Class of 1972. Apparently he enrolled at Yale but belatedly decided to attend Harvard Medical School. For whatever reason, this news apparently did not prevent him from having a place at a cadaver or from having a designated place and materials in every laboratory and small-group session. To my recollection, this practice continued well into our second year. The joke was that with the Yale system as it was, he could earn an M.D. from both Yale and Harvard. It is fitting that Don finally did make it down to the Yale medical campus.

Philip L. Cohen, M.D. '72
Philadelphia, Pa.

A snapshot of the School of Medicine

Since I started working at *Yale Medicine* in 1998, no issue of the magazine has generated the response of that to our Winter 2011 Bicentennial issue. Since we mailed this issue in mid-January, alumni, faculty, staff, and colleagues at our peer schools have been sending their congratulations on the photo essay, "A Week in the Life."

"The breadth of the life at YSM shown in these photos is terrific—I learned a great deal about the mysteries down the halls I don't walk—and in the hall in which I work every day. It really made me proud to be part of the medical campus," wrote Laura Crawford, a program administrator who coordinates international travel for residents and students.

"Had I not graduated in 1948, I would have immediately applied to Yale med school," wrote Albert A. Fisk, M.D. '48.

From H. Steven Moffic, M.D. '71, "Your special issue of 'A Week in the Life' helped me to appreciate the current life of Yale School of Medicine, movingly going from a custodian to our dean, from high-tech surgery to after-hours music, covering so many aspects of the system of Yale medicine."

Once again I must extend thanks to a great team of photographers—Julie Brown, Terry Dagradi, Robert Lisak, Michael Marsland, Frank Poole, and Stephanie Zollshan—and to our designer, Jenn Stockwell, as well as everyone in our publications office who supports our efforts.

John Curtis
Editor

SECOND OPINION BY SIDNEY HARRIS



"WE'VE FINALLY COMPUTERIZED YOUR FILES. NOW WE JUST HAVE TO GET THEM OFF FACEBOOK."

yale medicine

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A shorter workday for interns

New work rules for first-year residents put limits on their hours but raise concerns about training.

As of July 1, medical interns around the country will be required to work fewer hours per day but with more supervision, and will be forbidden to moonlight within their hospital or elsewhere. Those changes, mandated by the Accreditation Council for Graduate Medical Education (ACGME) in September last year, are drawing a mixture of praise and concern from the Yale medical community.

The most controversial change involves duty hours. Currently residents may work no more than 80 hours per week and no more than 24 hours continuously (plus up to six additional hours for transfer of patient care). The new rules will put interns—first-year residents—into a separate category. They can still work up to 80 hours but their shifts must end after 16 hours with no extra time for transfer of care. Interns at Yale are already barred from moonlighting.

Rosemarie L. Fisher, M.D., HS '75, professor of medicine and pediatrics, and associate dean of graduate medical education, sat on the 16-person ACGME task force that devised the new rules. "I'm getting things thrown at me," she said, "like 'Why did you do this?'"

The answer, she said, is based on the intersection of two factors: the interns' minimal level of training and growing evidence of problems caused by sleep deprivation. Sleep deprivation among interns has been linked to errors in patient care and medication



Resident Erin Vaughn, center, goes over medical records with first-year residents Anne Cowell and Natasha Shapiro as they prepare to hand off patients.

administration, as well as to car accidents after long shifts. Extreme fatigue also hinders the ability to learn. "All of us on this task force believe we need graduated responsibility for patient care," said Fisher, "and to do that we need to have the least trained, least competent people get more time off initially to learn and to get enough sleep so they're not impaired."

Others aren't so sure. Peter Herbert, M.D. '67, chief of staff and senior vice president for medical affairs at Yale-New Haven Hospital (YNHH), said, "My major concern is that this may diminish the quality of the interns' education and put them a little farther behind at the end of a year. Their perception of the overall course of illness obviously changes when they see less of it." Moreover, Herbert said, they are not considered the key decision makers at any time of day—that role is for attendings and senior residents. "We'll do our best to ensure that their education is as complete as possible, but there's no substitute for being in the hospital."

Jason Ackerman, M.D., one of Yale's current 170 interns, questions the notion that cutting interns' hours will prevent mistakes. "If the reasoning is that you make poor decisions after so many hours of not sleeping," he said, "it makes more sense to cap the hours of the senior resident, who ultimately makes the decisions and needs to be more rested and alert than the intern."

But like Fisher, Ackerman believes that experience can make a difference when fighting fatigue. When facing a medical situation, interns must go through a mental checklist—a task more difficult when exhausted but second nature with experience. He also agrees that more rest could improve learning. "At the end of a 30-hour call shift, it really is hard to absorb anything, no matter what the lecture or teaching point is."

et cetera...

Another concern is that as interns work fewer hours, there will be more patient handoffs. "We know handoffs between team members always increase error rates," said Asghar Rastegar, M.D., professor of medicine.

That's where another new rule comes in. As of July 1, a supervising physician must now be physically present or immediately available within the hospital to help ensure safe handoffs and patient care by interns. Fisher believes that this close supervision will also enhance the interns' education. Herbert notes that Yale-New Haven already has intricate protocols and electronic systems for handoffs, established in response to rule changes mandated in 2003.

Although the interns' reduced hours must be filled by other personnel, Herbert doesn't foresee a big increase in spending—again because of Yale's response to the 2003 rules, which included expanding Yale-New Haven's Hospitalist Service by bringing in dozens of physicians, physician assistants, and nurse practitioners.

Other changes in response to the rules are in the planning stages, according to Herbert, Fisher, and Rastegar.

"The interns are understandably anxious," said Rastegar, "partly because the devil you know is better than the one you don't. But I think things will settle down. And the bottom line is that we are not going to negotiate on the mission and our goals."

—Steve Kemper

Child Study Center celebrates 100 years of mental health research

As the School of Medicine's bicentennial year draws to a close, Yale's Child Study Center (CSC) celebrates a milestone of its own. A series of four symposia marks the centennial of an institution that has grown from a single room in the New Haven Dispensary into a leader in multidisciplinary research on children's mental health.

One of the School of Medicine's 28 departments, the CSC evolved and matured together with the field of developmental psychology—which was still young at the turn of the 20th century. The founder of psychoanalysis, Sigmund Freud, did not publish his major work on developmental psychology—*Three Essays on the Theory of Sexuality*—until 1905.

Freud's ideas did, however, influence G. Stanley Hall, the first president of Clark University and an early proponent of developmental psychology. One of Hall's students, Arnold L. Gesell, Ph.D., a native of Wisconsin, received



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In a single room in the New Haven Dispensary, Arnold Gesell launched in 1911 the Clinic of Child Development, which would become the Yale Child Study Center.

STOP AND SHOP COMES DOWNTOWN

More than a year after New Haven's only downtown supermarket closed, the Stop and Shop Supermarket Company has announced plans to fill the space on Whalley Avenue with a new store this spring. The store will replace a Shaw's supermarket that closed in March 2010.

The loss of Shaw's created a "food desert" downtown, depriving residents of the Whalley Avenue area and Yale students of a full-service supermarket. The new store comes after efforts by Yale, the city of New Haven, and the Greater Dwight Community Investment Corporation—owner of the site—to fill the space. The store is expected to generate about 130 full- and part-time jobs. It will include seafood, deli, and floral departments; a cheese shop and bakery; ethnic specialty items; and an in-store branch of People's United Bank.

—John Curtis

BIODESIGN INSTITUTE LAUNCHED

By early next year, research scientists in Building B-24 on the West Campus may be working on nanomachines that function inside living cells, developing materials for tissue engineering, or creating DNA nanorobots to carry out programmed tasks.

In January university officials announced the creation of the Biodesign Institute, where biologists, engineers, and researchers in other disciplines will explore the ways in which living and material systems operate at the nanoscale. James E. Rothman, Ph.D., the Fergus F. Wallace Professor of Biomedical Sciences and chair of the Department of Cell Biology, has been named director of the new institute. T. Kyle Vanderlick, Ph.D., dean of the School of Engineering and Applied Science, will serve as deputy director.

"Engineers design systems from first principles, and do so on ever-smaller scales," said Rothman. "Biologists are reverse engineers, and seek to deduce the design that nature provides. There is a profound intersection between these oppositely oriented views that enriches both."

—J.C.

one of the first two doctorates conferred in developmental psychology in the United States from Clark in 1906. Gesell became an assistant professor in Yale's new Department of Education in 1911. On his arrival, Gesell persuaded the medical school's dean, George Blumer, M.D. 1891, to provide a room in the dispensary for the study of retarded children. While working part time, Gesell then enrolled in the School of Medicine and received his M.D. in 1915, four years after he'd opened his clinic in the dispensary.

Gesell's work influenced not only the department he founded—then called the Yale Clinic of Child Development—but also the burgeoning field of child psychology as well as pediatrics. He was among the first to attempt a quantitative study of children's maturation, observing and measuring the responses of infants and children to different stimuli. A pioneer in the use of motion pictures and one-way mirrors, he filmed about 12,000 children to record and study their behavioral patterns. Mental development, he concluded, occurs in an identifiable sequence of stages similar to those associated with physical development. Some of Gesell's data were integrated into schedules used to calculate the Gesell Developmental Quotient—for a time a widely used measure of young children's intelligence. One of his most prominent students was Benjamin Spock, MED '29, whose ideas about child care influenced generations of parents. Although some of Gesell's views have fallen out of favor, he exerted a strong influence on American psychology in general as well as on childrearing practices. Gesell retired from the University in 1948 and died in 1961.

The first of four symposia was held on January 11 and focused on infant mental health and development, with talks by the CSC faculty as well as by Helen Egger, M.D. '91, assistant professor of psychiatry and behavioral sciences at Duke University School of Medicine. Subsequent symposia will honor Gesell's successors as CSC directors: Milton J.E.

Senn, M.D., Donald J. Cohen, M.D. '66, and Albert J. Solnit, M.D., HS '52.

CSC chair Fred R. Volkmar, M.D., smiled brightly when asked about the center's future. "We've got a big push for anxiety programs," he said, adding that a recent donation will fund three new professorships. Anxiety disorders, he said, affect about 20 percent of the population and often lead to or are associated with such problems as depression and mood disorders.

Expansion is also occurring in the area of autism spectrum disorders (ASDS). "For the first time, we have kids with [ASDS] going to college on a regular basis, which is great," said Volkmar. "But they need some special help, and so we're trying to think about ways we can meet that need." Although psychologists have made great strides in their ability to diagnose and intervene in children with ASDS, Volkmar noted that adolescents and young adults with these disorders still need support as they complete their education and enter mainstream society.

Another point of pride for Volkmar is the CSC's Albert J. Solnit Integrated Training Program, a highly selective and innovative six-year program begun in July 2004. The program, which admits only two trainees per year, combines the traditional internship, residency, and fellowship years and prepares trainees for board examinations in both adult and child psychiatry.

An innovative program from its start in 1911, Yale's CSC is still the leader in the field. Volkmar credits the department's collaborative model—at least in part—for its success. "Some of the things here we take for granted," he said, noting that the center's scientists work in a range of fields, from neurobiology of developmental disorders to stem cells to MRI. "Because there's so much going on," he said, "it means there's more potential for cross-disciplinary work," which is critical to the successes he is aiming for.

—Charles Gershman

A federal grant moves plans to link med school with downtown a step forward

Nearly half a century ago, the area between the Yale School of Medicine and downtown New Haven was the bustling Oak Street neighborhood, full of homes and small businesses. That space is presently occupied by Route 34, a busy highway that carries tens of thousands of speeding cars each day.

In an ambitious project known as Downtown Crossing, the city is planning to convert Route 34 back to a street grid that will reunite the School of Medicine with the rest of the university and downtown New Haven. Developer Carter Winstanley has already committed to developing a \$140 million office and lab building at 100 College Street. The proposed eight-story building will occupy what is now thousands of square feet of empty air above the connector between 300 George Street—another Winstanley building—and the School of Public Health. Like 300 George Street, which houses a number of medical school programs and offices, the new building is slated to accommodate some of New Haven's burgeoning biotech enterprises and could also provide much-needed space for the medical campus. "We have an infinite number of ideas for growing our programs and we need space to accommodate them," said Dean Robert J. Alpern, M.D., Ensign Professor of Medicine.

Downtown Crossing came a step closer to reality in October when the city received a \$16 million grant from the U.S. Department of Transportation to begin Phase 1, covering the eastern half of the connector from Union Avenue to



A rendering (below) shows the Route 34 corridor after the first phase of Downtown Crossing. A proposed eight-story building would add thousands of square feet of new office and lab space. At left, the connector and the Air Rights Garage.

JOHN CURTIS



COURTESY FUSS & O'NEILL

College Street. The grant will allow the city to reclaim 11 acres of land that will be used for new institutional, retail, residential, and commercial space—creating 2,000 immediate construction jobs and 960 permanent jobs, according to the mayor's office. Phase 1 will also reconnect the medical school campus with downtown New Haven.

"The medical school campus is very active during the day as a place to work but it's not active as a place to live," said Alpern. "We'd like one continuum as you walk from Chapel Street toward the medical school."

Returning the area to its urban origins will alleviate some of its traffic dangers—two pedestrians, including a Yale medical student, have been killed in recent years—and provide much-needed growing space for the medical campus and New Haven businesses. "This project allows us to knit the two principal job platforms of the city together," said Mayor John DeStefano Jr. "It addresses a near-term demand for

real estate and allows us to significantly increase the size of the central business district, which will have benefits for collateral economic growth as well."

The federal grant will be supplemented by \$8 million from the state and \$7 million from the city to cover the \$31 million estimated cost of the first phase of the project. The second phase—to develop the western half of the connector from Orchard Street to Ella Grasso Boulevard—is still in the preliminary planning stage.

—Jill Max

RNA HELPS GENES DETERMINE TRAITS

A Yale study suggests that genes are not the sole determinants of an organism's characteristics. The team reported in *Nature Genetics* on December 26, 2010, that a type of regulatory RNA works with a common protein, Hsp90, to protect organisms from harmful genetic variations—without the help of genes.

About a decade ago, scientists found that flies lacking Hsp90 often had abnormalities. Hsp90 seemed to protect against harmful genetic variations, but the researchers suspected that it doesn't act alone. They found that a small non-coding RNA called Piwi-interacting RNA acts with Hsp90 and another organizing protein called Hop to prevent both the emergence of new genetic variants and the activation of existing variants.

"This study shows that we still have a lot to learn about the most basic principles of gene regulation," said senior author Haifan Lin, PH.D., director of the Yale Stem Cell Center.

—John Curtis

THE BRAIN'S MOLECULAR GLUE

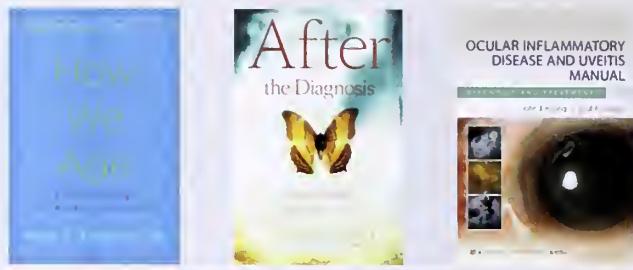
The human brain has about 90 billion neurons, interconnected through junctions called synapses. Our brains form synapses to organize new knowledge and memories; malfunctioning synapses, on the other hand, are linked to such disorders as mental retardation and Alzheimer disease.

Yale scientists reported in the journal *Neuron* in December that a molecule called synaptic cell adhesion molecule 1 (*SyncAM 1*) is essential for both synapse formation and maintenance. When the *SyncAM 1* gene was activated in mice, more synaptic connections were formed. Mice without the molecule produced fewer synapses. So far, so good.

The team's next finding, however, was not so clear-cut. Mice with high levels of *SyncAM 1* failed at spatial learning, while mice lacking *SyncAM 1* learned better. Too much of a good thing?

"It appears that *SyncAM 1* ties synapses together; some of this molecule is needed to promote contact, but too much glues down the synapse and inhibits its function," said senior author Thomas Biederer, PH.D., associate professor of molecular biophysics and biochemistry.

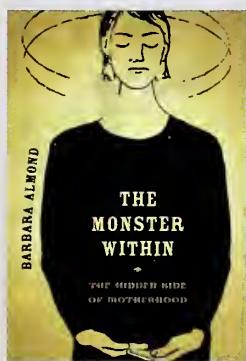
—J.C.



The dark side of motherhood

A psychiatrist explores mothers' ambivalence over their needs and their children's.

Poetry, paintings, and corporate America have long idealized the love of a mother for her child, from Kipling's "Mother o' Mine" to Mary Cassatt's portraits and soft-focus Mother's Day cards. Psychiatrist Barbara Almond, M.D. '63, has written a new book about another aspect of motherhood: mothers' feelings of anger and resentment.



The Monster Within
Barbara Almond, M.D. '63

Almond writes, "That mothers have mixed feelings about their children should come as no surprise to anybody, but it is amazing how much of a taboo the negative side of ambivalence carries in our culture."

Almond draws on stories from clinical practice and fiction to investigate the dark side—from a woman's commonplace fear that she will love her child insufficiently to extremes that include a mother's murder of a daughter in Toni Morrison's novel *Beloved* and Andrea Yates's real-life drowning of her five children.

Almond contends that facing ambivalence, which she views as a mixture of loving and hateful feelings, can be constructive, "when it leads the mother to think creatively about her difficulties mothering and how they can be managed."

Some publishers—and some reviewers—found Almond's book too disturbing. On the contrary, she says, "I'm offering this as a comfort to mothers. They don't have to drive themselves so hard."

—Cathy Shufro

How We Age: A Doctor's Journey into the Heart of Growing Old

by Marc E. Agronin, M.D. '91 (Da Capo Press) The author, a specialist in geriatric psychiatry, recounts his experiences counseling the residents of the Miami Jewish Home and Hospital, and describes how his work has transformed his view of aging. This book illustrates that aging is more than an inevitable decline—that old age can also be a period of vitality, wisdom, and creativity.

After the Diagnosis:
Transcending Chronic Illness
by Julian Seifter, M.D., HS '78, with Betsy Seifter, PH.D. (Simon and Schuster) Julian Seifter had to learn to accept himself as a person with a lifelong illness when he was diagnosed with type 1 diabetes at the start of his intern year. In an account that is part memoir, part self-help book, the author speaks as both physician and patient, offering strategies helpful in managing chronic challenges on a day-to-day basis in order to maintain a positive and productive attitude toward life.

Envy Theory: Perspectives on the Psychology of Envy

by Frank J. Ninivaggi, M.D., FW '77, assistant clinical professor in the Child Study Center and of psychiatry (Rowman & Littlefield) The author offers a theory of envy as the nucleus of information processing. He explores various concepts related to envy as the root of mental disorders and treatment resistance as well as the possibility of turning envy into a tool for healthy maturation. He also advances principles and guidelines for pragmatic applications of his theory in psychotherapies and psychoeducation.

Ocular Inflammatory Disease and Uveitis Manual: Diagnosis and Treatment

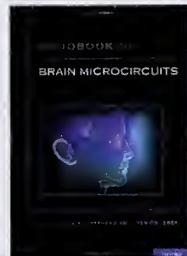
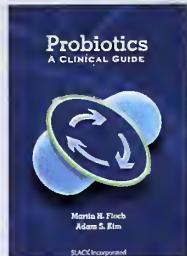
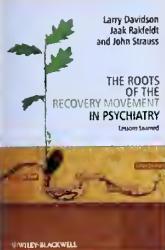
by John J. Huang, M.D., clinical instructor in medicine; and Paul A. Gaudio, M.D., assistant clinical professor of ophthalmology and visual science (Lippincott Williams & Wilkins) This clinical manual is designed for quick reference; it features color photographs along with bulleted how-to instructions for workup and treatment of each disorder. The book is organized into anterior, intermediate, and posterior eye disease, with separate sections for inflammation and infections of the cornea and sclera.

The Roots of the Recovery Movement in Psychiatry: Lessons Learned

by Larry Davidson, PH.D., professor of psychiatry; Jaak Rakfeldt, PH.D., assistant clinical professor of psychiatry; and John Strauss, M.D. '59, professor emeritus of psychiatry (Wiley) The authors highlight the limitations of such previous efforts to reform and transform mental health practice as the deinstitutionalization movement begun in the 1950s, in the hope that the field will not repeat these mistakes. The book incorporates lessons about recovery gained from such related fields as psychology, sociology, social welfare, philosophy, political economic theory, and civil rights.

Probiotics: A Clinical Guide

by Martin H. Floch, M.D., clinical professor of medicine; and Adam S. Kim, M.D. (Slack) This guide presents current and evidence-based recommendations for primary care providers and



gastroenterologists in the use of probiotics to treat specific diseases and disorders. It includes a review of the science underlying probiotics and probiotic products.

Handbook of Brain Microcircuits, 1st ed.

edited by Gordon Shepherd, M.D., D.PHIL., professor of neurobiology; and Sten Grillner, M.D. (Oxford University Press) This handbook covers over 40 regions of the vertebrate and invertebrate nervous system to provide a guide to key circuits within the neurosciences. Each chapter is organized around wiring diagrams of the key circuits. The book includes a comprehensive presentation of a new concept of brain microcircuits as the major organizing principle of the nervous system.

Visualizing Psychology, 2nd ed. by Siri Carpenter, PH.D. '00; and Karen Huffman, M.D. (Wiley) This book integrates updated photographs, illustrations, and graphics to elucidate complex concepts in psychology. The goal is to help students understand the world around them and interpret what they see in a meaningful and accurate way. Examples illustrate the uses of psychology in the workplace and personal relationships.

Gastrointestinal Malignancies: An Issue of Emerging Cancer Therapeutics

edited by Wasif Saif, M.D., M.B.B.S., associate professor of medicine (medical oncology) (Demos Medical Publishing) This text provides a review of current and emerging therapies for this group of malignancies, including common colorectal

cancers, rare gastrointestinal stroma malignancies, and esophageal cancer. The chapters discuss current screening tools for colon cancers as well as assessment of predictive markers in the management of colon cancer. The volume also describes the state-of-the-art use of cytotoxic chemotherapy and the incorporation of newer biological therapies.

Seeing Patients: Unconscious Bias in Health Care

by Augustus A. White III, M.D., HS '66 (Harvard University Press) In a book that is part autobiography, the author argues that the best means to improve health care is for medical schools to train physicians who are not only scientifically adept but also culturally competent. White cites studies showing that physicians and hospital staff on the whole dispense lower-quality care to minority patients. Females, both white and nonwhite, homosexuals, and the elderly are also treated differently from middle-class white men. Poorer quality of care results in measurably higher mortality rates among these vulnerable subpopulations.

The descriptions above are based on information from the publishers.

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Changing the language of medicine

"From the moment we learn to speak the language of medicine," said Pauline Chen, M.D., HS '98, "we are taught to express ourselves in the passive voice."

And that, said Chen, author of *Final Exam: A Surgeon's Reflections on Mortality*, has implications for patient care. Such phrases as "the patient presented ... sustained a gunshot wound ... pronounced dead ..." turn patients into passive recipients of treatment rather than human beings actively involved in their care, said Chen, who gave the John P. McGovern Lecture for the Program for the Humanities in Medicine in January.

"The language we use in talking about our patients, the mother tongue of medicine, the passive voice, does little to foster the kind of support and communication integral to compassionate care. It obliges us to objectify the very people we seek to care for. And it provides an invisible but powerful hurdle to true patient-centered care," she said. "The greatest of doctors are those who bypass the passive language they have inherited and replace it with the active comfort, true healing, and hope of compassionate, patient-centered care."

—John Curtis

Mapping pathways in the human brain

The human brain has 86 billion neurons, connected by 150 trillion synapses that exchange signals through 100,000 miles of wiring. Since the 1980s David C. Van Essen, Ph.D., chair and Edison Professor of Neurobiology at the Washington University School of Medicine in St. Louis, has been trying to map those pathways. "The brain mediates perceptions, actions, and memories," he told the audience at a Neurobiology Seminar in January. "It does that through the specificity of its wiring."

Van Essen and colleagues at the University of Minnesota and seven other institutions are part of the Human Connectome Project, which will use noninvasive neuroimaging techniques to map brain circuits in 1,200 healthy adults (twins and their non-twin siblings). The project recently received a five-year \$30 million grant from the NIH.

Their research will yield valuable information about the brain's workings, and may lead to future projects to study psychiatric and neurological disorders. But Van Essen acknowledged that given the complexity of neural circuitry, the effort poses an "ambitious and exciting" challenge. "We can anticipate major discoveries and insights, but we aren't going to get a complete connectome, macroscopic or microscopic, in the near foreseeable future," he said, "so we need to manage our expectations."

—J.C.

The medical school's first full-time dean

Vernon Lippard served three terms as dean, steering the medical school through growth in its physical plant and an explosion in research funding.

By Kerry Falvey



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Until the middle of the 20th century, the School of Medicine's department chairs were expected to serve as deans, juggling their decanal responsibilities in addition to their other work. When Dean C.N.H. Long, M.D., stepped down in 1952, the deanship became a full-time position, and the Yale Corporation hired Vernon W. Lippard, M.D. '29, who had served as dean of two other medical schools.

Lippard applied to the School of Medicine in 1925, after only three years at Yale College. Four years later he left the school with an M.D. cum laude. He had been a student editor of the *Yale Journal of Biology and Medicine*, which began publication during his last year of medical school. After a period in private practice as a pediatrician, Lippard became an assistant dean of Columbia University's College of Physicians and Surgeons in 1939. During World War II he served in the U.S. Army with the 9th General Hospital in the Pacific Theater of

Operations, returning to Columbia in 1945. In 1946 he became dean of Louisiana State University School of Medicine. Yale hired him away from the University of Virginia School of Medicine, where he had been serving as dean since 1949.

At Yale, Lippard quickly focused on a number of challenges—a deteriorating physical plant, an ill-defined relationship with Grace-New Haven Hospital, deficiencies in the clinical departments, an undernourished Department of Public Health, and a need for increased financial support for operations.

Lippard's tenure happily coincided with an explosion in federal funding for biomedical research. The dean also possessed a knack for fundraising. In 1953, he secured a grant to build a new dormitory—Edward S. Harkness Memorial Hall was completed in 1955—and funding for the Mary S. Harkness Memorial Auditorium, the first large-capacity space at the medical school, with 449 seats. The dean



BELow LEFT As the first full-time dean, Vernon Lippard oversaw a period of growth at the School of Medicine. During his tenure, which began in 1952, a new dormitory and public health school were built and the medical school formalized its partnership with Yale-New Haven Hospital.

An aerial view of the medical campus from the 1950s, as the School of Medicine was about to see an explosion of growth in its physical plant.

oversaw an addition to Sterling Hall of Medicine; he also renovated or built new laboratory space for the departments of pharmacology, epidemiology, internal medicine, pediatrics, and radiology. The Department of Public Health celebrated its 50th anniversary in 1965 with a new home, the nine-story Laboratory of Epidemiology and Public Health. The Connecticut Mental Health Center, a cooperative endeavor between Yale and the state, opened in 1966. With the exception of Dean Milton C. Winternitz, M.D., no previous dean had embarked on such extensive expansion of the physical plant.

Committed to building Yale's clinical departments, Lippard increased the full-time faculty from about 195 members in 1952 to 520 in 1967 with an additional 560 part-time appointments. Many departments were reorganized, including the new Department of Epidemiology and Public Health, which combined public health with the Section of

Epidemiology and Preventive Medicine under one chair in 1961. Federal grant money pouring into the School of Medicine at this time to fund research helped spur this huge growth. The school's annual operating budget grew from nearly \$3 million in 1952 to over \$16 million in 1967; the endowment doubled as well.

Lippard streamlined management of the medical school by centralizing authority within the dean's office. He hired two half-time assistant deans: Thomas R. Forbes, Ph.D., as assistant dean for student affairs and chair of admissions; and Lippard's former colleague from the University of Virginia, Arthur Ebbert Jr., M.D., as assistant dean of postgraduate medical education.

Lippard steered the medical school through another agreement with the hospital, creating the Yale-New Haven Medical Center in 1965. The agreement gave Yale more say in administering the hospital and changed the institution's name to Yale-New Haven Hospital.

Lippard maintained a high profile working on medical issues at the national level. After serving as president of the American Association of Medical Colleges in 1954–55, he was a member of the Surgeon General's Consultant Committee on Medical Education, which published a report in 1959 on the growing shortage of physicians in the United States. As a member of the National Committee on Health Services for the Aged, Lippard was involved in the early development of the Medicare program. When he left the School of Medicine in 1967 after three terms as dean, he was appointed assistant for medical development to the president and fellows of the Yale Corporation. He died in 1985.

This article has been adapted from *Medicine at Yale: The First 200 Years*, a book by Kerry Falvey celebrating the bicentennial of the Yale School of Medicine.



The high cost of a medical education

With the cost of medical school topping \$250,000, becoming a doctor means going into debt.

By Sonya Collins

Illustration by Joanna Szachowska-Tarkowska

In the summer of 1957, Warren D. Widmann, M.D. '61, HS '67, earned his first year's tuition for the School of Medicine by waiting tables at a hotel on the New Jersey shore. And he had money left over.

"I think when I started medical school, it was either \$650 or \$850 a year," Widmann says. Unable to work summers after his first year, Widmann relied on his wife's salary as a schoolteacher and some help from his parents—a high school administrator and a school secretary—and he finished medical school debt-free. "Now," says Widmann, "hardly anybody in the middle class can afford to go to medical school without accumulating debt."

Since Widmann's day, medical school tuition has risen on a much steeper curve than wages and the cost of living. When "Adam" (students' identities have been shielded in this article), the son of two schoolteachers, started medical school in 2008, Yale's tuition was \$42,350 per year. Students were advised to budget an additional \$25,000 per year for books, equipment, travel to rotations, medical expenses, licensing exams, and living expenses. Adam's parents were expected to contribute about \$8,000 a year, and scholarships and loans would cover the rest.

Recent changes to financial aid policies have relieved some of the pressure on middle-class families, but students still struggle and the medical school would like to do more.

"People save their whole lives to send their kids to college, but they haven't been saving to send them to medical school. That's a reason there's so much debt among medical students," says Dean Robert J. Alpern, M.D., Ensign Professor of Medicine. "The only way to address debt is to increase the scholarship endowment. I don't see tuition going down. Our only hope is that we can get the endowment to rise faster than tuition rises."

The basics of financial aid

Yale is not the most expensive medical school in the country. During the 2009–2010 academic year, tuition at Tufts (\$50,320), for example, exceeded Yale's \$43,850. Nor is Yale's tuition far above the national average for private medical schools—\$39,233 in 2009.

How do students come up with the money? The School of Medicine has a "need-blind" admission policy and a "need-based" financial aid policy—once accepted, a student's financial needs are fully met through loans and scholarships. But first, students must borrow what's known as the "unit loan," currently \$22,700 per year.

Before 2008, if the parents' total income topped \$45,000, they were expected to help pay for their child's medical school education. Parental assets apart from income are also considered in determining students' need. (The Financial

Aid Office uses a formula that considers some 142 variables. "We determine a parent contribution," says Laura Ment, M.D., associate dean for admissions and financial aid, and professor of pediatrics and neurology, "but parents don't always contribute, so students borrow to cover their parents' contribution."

In 2008, thanks to the infusion of \$1.1 million from the Yale endowment, the income threshold for parental contributions increased to \$100,000. Since then, a sliding scale for parents whose incomes fall between \$100,000 and \$140,000 has been introduced. "These changes benefit almost 90 percent of the students who receive aid," says Ment.

The need-based financial aid policy allows students from lower- to lower-middle-class backgrounds to graduate with debt

left goes into Michelle's checking account each September and January. "I've never had accessible money before, so it almost feels like a luxury to me even though I'm budgeting," she says.

Michelle shares a one-bedroom apartment, cooks at home, walks everywhere, and wears hand-me-downs. The money usually runs out shortly before the next disbursement is due. "I don't know what I would do if I had to buy clothes, or if I didn't share a bedroom, or if I had to spend any money."

"Emma White," who entered medical school in the same boat as Michelle, borrowing the unit loan and receiving the rest from scholarships, scrimps as well. "I never

"Not many students will go into primary care just to have their debts forgiven; they go into primary care because they love the field and having their debt repaid is a bonus on top of that."

—Adam

that rivals the lowest medical school averages in the country. (In 2008, the average debt of U.S. medical school graduates ranged from \$79,872 at the University of Hawaii to \$194,548 at Creighton University.) In 2010 Yale medical students graduated with an average debt of about \$127,000, including debt incurred prior to medical school. "By selecting students based on their merits, without regard to their financial circumstances, and by providing financial aid sufficient to enable all accepted students to attend the school without hardship, we have been able to enroll outstanding and exceptionally diverse classes year after year," says Ment.

Making ends meet

Whatever their financial status, many medical students struggle with finances during their student days. Before medical school, "Michelle" had never had health insurance. Her father is unemployed and her mother has never worked, so she borrows only the unit loan. After tuition and any other monies owed to Yale are subtracted, what's

buy clothes," White says, recalling a resident who teased her about the bleach spot on her pants. "It's a tight budget. You don't have a lot of extra spending money." She grows her own vegetables and accepts gifts of tomatoes from a neighbor's garden as well. By going to the same Cedar Street lunch cart every day, she gets her meal for half price and sometimes takes home leftovers. "You do feel like you're a little old for this when all of your friends from college are now making six figures," she says.

To get free yoga classes during her first two years of medical school, "Lynn" would show up at 5:30 a.m., take a 90-minute class, wait for the others to leave, then clean the bathrooms and the studio. She also subsists on a backyard garden and supplements her harvest with weekly deliveries from a farm share program.

One student, whose father is a hospitalist and whose mother doesn't work, said that he can't expect much help because he has six siblings. "My parents have had to help them all," says the student, who asked to be identified as

'Mike.' "I'm not going to receive any money from them." He borrowed \$50,000 for his undergraduate education and will add \$240,000 to those loans by the time he finishes medical school. At \$290,000, his debt will be more than double the average debt of a recent graduate of the School of Medicine.

Disbursements arrive in January and September, and budgeting can be a challenge. "Right now I'm living on my credit card," says Mike, who admits that he could budget better. "A number of us all run out by the middle of June. As soon as September comes, I'm going to pay off all my credit card bills. And the cycle will start all over again."

Ment and Gerber advise students on ways to live within their means. "We show students where they need to cut corners—whether it's finding a roommate, eating at home, or going to Costco and buying in bulk," Ment says. "I think the vast majority of our students understand these strategies."

Living with debt

Despite significant student debt, loan forgiveness programs like those of the National Institutes of Health (NIH) and the National Health Service Corps (NHSC) attract relatively few students. These programs offer full or partial loan repayment to physicians who conduct research for nonprofit organizations or practice primary care in underserved areas. Although the United States has produced roughly 20,000 doctors per year for the past 10 years, in 2009 only 3,391 physicians who had earned their M.D.s in the previous decade applied to the NIH's loan forgiveness program. For NHSC, the number of annual applicants dropped from 963 in 2003 to 355 in 2008.

Michelle, who came to medical school to be a psychiatrist, says she would go into a loan forgiveness program only if its stipulations fit her career plans. Nor is Mike, who plans to pursue an ear, nose, and throat specialty, willing to alter his career plans over his nearly \$300,000 of debt. As Adam pointed out, "Not many students will go into primary care just to have their debts forgiven; they go into primary care because they love the field and having their debt repaid is a bonus on top of that."

Many students—those with debt levels ranging from relatively low to quite high—take their indebtedness in stride. "Jonathan" is leaning toward pediatrics or medicine but does not intend to apply to a loan forgiveness program. He feels that many of his peers are not interested in the programs because they "are not that fearful of their debt."

Some students, however, feel profoundly burdened by their debt and the emotional toll does not necessarily correlate with the number of dollars borrowed. "It gives me a knot in my stomach every day," says White, who borrowed only the unit loan for her first two years. "You don't know what lies down the road and if you'll be able to pay it off."

Debt and career choices

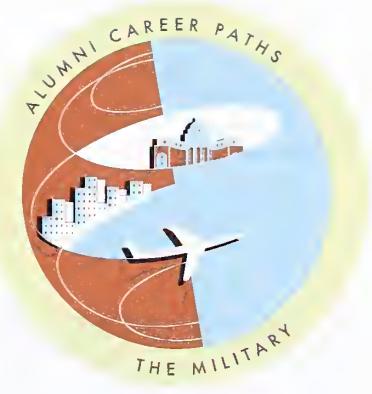
Although it would seem that debt would drive young doctors into high-reward specialties, studies on the issue have only confounded researchers. A December 2008 report by the Association of American Medical Colleges found that both debt and students' plans to pursue primary care or practice in underserved areas rose in parallel. Many Yale students feel debt has little to do with career choices and describe a host of other intricate factors—not the least of which are personal goals and dreams.

When Nancy R. Angoff, M.P.H. '81, M.D. '90, HS '93, associate dean for student affairs and associate professor of internal medicine, polled students several years ago, she found that for many, debt was a significant factor in their choice of specialty. But Angoff and other faculty believe that debt is not the greatest motivator in students' career decisions. Nevertheless, all acknowledge the desire to ease the financial burden of becoming a physician or even to remove money from the equation completely. "I personally feel we'd be a lot better off as a country if there was no tuition for medical school," says Robert H. Gifford, M.D., HS '67, the school's first deputy dean for education, who retired in 2000.

Lowering student debt is a continuous priority for Alpern. Like Gifford, he would like to see the medical school eventually go tuition-free but admits it would be a challenge. The medical school, Alpern notes, was able to institute more generous financial aid policies in 2008 and then again in 2009 and 2010 because the Yale endowment was steadily growing. "And we had plans to do more until the endowment dropped, so if the endowment recovers, we'll be able to get back into the business of doing more to lower debt." **Y.M.**

Sonya Collins is a freelance writer based in Atlanta, Ga.





Medicine and the military

Life in the armed forces offers some physicians a chance to serve both country and patients.

By Jill Max

Scott Hines, M.D. '99, made quite an impression when he showed up for his admissions interview at the School of Medicine. Proud of his position as a flight test officer in the U.S. Navy, he wore his dress whites, which he considered an expression of his identity. As a veteran of combat missions in Operation Desert Storm, Hines was used to pressure, but the interview put him on the spot in a different way. How, he was asked, could he justify going from a career in which his job was to kill people to a new calling—healing people? Hines didn't see a conflict. As a military officer, his goal was to provide a strong defense that would deter war. He saw military service as a way to save lives, albeit in a different way from the work of a physician.

The reasons physicians serve in the military or soldiers go into medicine are as varied as the individuals who take these paths. For some, the armed forces offer a way to finance their medical education; for others the choice reflects a desire to serve their country. Still others were obligated in the past to serve as a result of the doctors' draft, which, from 1950 to 1973, required male physicians and other health care providers to serve in the military. While deployment overseas and separation from their families

deter some from entering the military, travel, the experience of leadership, and the thrill of adventure entice others. One common ideal, however, unites those who choose both the military and medicine. As Sarah Goss of the Class of 2013, a West Point graduate and commissioned Army officer who plans to serve in the military after medical school, expressed it: "They both involve service and lifelong learning."

From TOPGUN to trauma platoon

In 1985 Hines had just graduated from Boston College with a scholarship to attend Ohio State University College of Medicine. Instead he signed up to become a Navy pilot. "The day I walked into Aviation Officer Candidate School I knew that I was going to make a career of the Navy," he said. "It felt right from day one for me."

Hines studied at the Navy Fighter Weapons School in Miramar, Calif., popularly known as TOPGUN. He served for three years during the Gulf War, in which he completed almost 40 combat missions. After the birth of his first child Hines realized that his Navy career path would mean multiple deployments and a lot of time away from his growing family. It was time for another change.



PREVIOUS PAGE Just prior to her graduation from West Point, Sarah Goss, a member of the medical school Class of 2013, posed in full dress regalia for her "firstie" or senior portrait.

Hines applied to the School of Medicine and received a scholarship from the Navy. After medical school he did a transitional internship at the Naval Medical Center Portsmouth in Virginia and then became a flight surgeon—a general medical officer. In 2004 he completed his residency in emergency medicine at Portsmouth in a program that is rigorous yet largely unrecognized. “A lot of folks think the only people who stay in military medicine are the ones who can’t cut it on the outside,” he said. “That is simply not the case.”

Hines believes that his years as a flight surgeon made him a better and more confident resident. He stayed on at Portsmouth as a staff physician in the emergency department. In 2008 he was deployed to a remote airstrip in northern Iraq for eight months and he came home to the realization that his deployment had taken a significant toll on his family; one of his three sons had difficulty adjusting to his return. Hines retired from the military in December 2009. Even after 22 years of active service, he still wonders whether he did enough.

An expert in bullet wounds

Martin Fackler, M.D. ’59, became interested in medicine because his grandfather and uncle were physicians. The doctors’ draft was in effect when he went to medical school; after his internship at the University of Oregon at Portland, he served in the Navy on a transport service that carried troops, their dependents, and government employees all over the Pacific. Fackler was one of two naval doctors aboard the ship.

After a general surgery residency at Chelsea Naval Hospital in Boston and training in plastic surgery at Bethesda Naval Hospital, Fackler was sent to the Naval Support Activity Hospital in Da Nang, Vietnam, in December 1967; one month later, the Tet Offensive began. “You just can’t get that kind of training in trauma surgery anywhere else except in the military in time of war,” he said.

In Da Nang, Fackler stabilized incoming casualties. Most cases were flown out within a day or two, but extensive ones remained at Da Nang until healed. Thus, in Da Nang, Fackler had limited experience treating postoperative complications. His next post, however, was in Yokosuka, Japan, where patients were sent to recover from surgery. He expanded his overseas experience by transferring to the Army and becoming chief of surgery at Landstuhl Regional

Medical Center in Germany—the largest military hospital outside the continental United States.

After 20 years in the military, Fackler was thinking of retiring but was invited to set up and direct a lab for the study of gunshot wounds at the Presidio Army base in San Francisco. A competitive shooter since the age of 14—he had been captain of the rifle team at Gettysburg College—Fackler jumped at the job, which also made use of his experience in Da Nang. For 10 years, Fackler devoted all his time to wound ballistics research, thanks to funding provided by the Army’s Medical Research and Development Command.

Fackler is now regarded as one of the world’s foremost ballistics experts, having developed wound profiles for 26 different types of bullets. He retired from the Army in 1991 after 31 years of active duty. Since then he has testified in over 200 trials as a ballistics expert. He now lives in Gainesville, Fla., where he is on the staff of the pathology department of the University of Florida. He still receives calls to testify but rarely travels.

William Heydorn, M.D. ’59, a classmate of Fackler’s, has also done his share of traveling with the Army, with two postings in Germany and one in Korea. Heydorn served under the doctors’ draft after completing his internship at Bassett Hospital in Cooperstown, N.Y. He completed a tour of duty in Germany, then a residency in general surgery, and began a 13-month tour in Korea in 1966, where he was the hospital commander and only fully trained general surgeon at the 44th Surgical Hospital. His first patient was a Korean farmer who had stepped on a land mine. Heydorn returned to Germany as a general surgeon and then trained in cardiothoracic surgery at San Francisco’s Letterman Army Hospital. Heydorn crossed paths with Fackler during his third tour at Letterman, and ended up spending the last 14 years of his career at Letterman as chief of surgery and commanding officer before retiring in 1989 after 30 years of service. Heydorn now surveys hospitals for the Joint Commission International, an organization that accredits hospitals around the world; he has worked in 17 countries during the last four years.

Adrenaline and a sense of accomplishment

It would have been easy for Heydorn to leave military service after 10 or 20 years, but he stayed because he enjoyed both the work and the places he visited. Lionel Nelson,

M.D. '69, on the other hand, initially thought a career in the military wasn't for him. When he received his draft notice in 1971, during his first year of surgical residency at Stanford, he joined his local Air Force Reserve unit. He expected to be mobilized, but the Vietnam War was winding down. He didn't much care for his military stint and spent the next few years building his otolaryngology practice and doing head and neck trauma surgery in San Jose, Calif. In 1984, the year he turned 40, he found himself looking for excitement. He found it one night at the bedside of a SWAT police officer he'd treated for a gunshot wound. The officer suggested that Nelson join the local Army Reserve Special Operations Civil Affairs Unit. From that time on, he was hooked. He trained to become a flight surgeon and over the next 18 years he left his practice several times a year for short missions as the physician and flight surgeon on small teams involved in civil-military operations, mostly in Southeast Asia. Nelson was expected to take care of the medical needs of the pilots and crew, which included inner ear, sinus, or vision problems that could adversely affect a mission, as well as any other medical issues that cropped up. He also addressed medical needs of the local population.

Nelson retired from the Army Reserve in 2002, but in 2008, in response to a growing need for flight surgeons, he volunteered for a tour of duty in Iraq. Three months before his 65th birthday, he became the brigade flight surgeon with Task Force 449 at Camp Striker in Baghdad. Embedded with the troops and far from the comforts of a support network, he found that his work differed from what he was used to in his otolaryngology practice; here he served as GP, flight surgeon, surgeon, podiatrist, and sometimes dentist. "There was no telling what challenge was about to come through your tent flap next," he said of his three-month tour. "Life could change in a moment from mundane to high drama. It forced you to pull up medical knowledge from those deep brain recesses that you don't remember learning, but must have at some time as a medical student or house staff." He described the experience as "an unforgettable adrenaline high accompanied by a great sense of accomplishment."

As the senior medical officer Nelson had a lot of experience, but he also took flak for his age; some of the younger soldiers, he heard, were making bets on how soon he would fall and break his hip. Little did they know that at home Nelson rises at 4:30 a.m. for a 70-minute workout before



COURTESY OF SARAH GOSS

The summer before her "plebe" or freshman year at West Point, medical student Sarah Goss spent six weeks in training, including rappelling at a site affectionately known as "Beast Barracks."



Since his retirement after 30 years in the military, William Heydorn has surveyed hospitals for the Accreditation Counsel on Graduate Medical Education. In the past four years he has worked in hospitals in more than 18 countries in Europe, Asia, the Middle East, and South America. In 2010 he posed with the senior leadership of the Huashan Hospital at Fuday University in Shanghai.

surgery. As it turned out, the soldiers who once laughed at him came to confide in him, viewing him as a father—or perhaps grandfather—figure. “Some of my most interesting experiences in Iraq were just sitting and talking,” he said. “The soldiers were young; for most of them it was the first time they had been away from home, they were in a hostile environment, and they were on edge from mortar attacks. You can call it psychiatry, but it was basically friendship.”

“Nothing like it in civilian life”

The idea of being a physician in the military often conjures visions of what Nelson experienced in Iraq: an austere environment, lots of noise, and tedium punctuated by mayhem.

In reality, however, the military offers a variety of experiences. William M. Narva, M.D. '56, spent most of his 35-year Navy career in the Washington, D.C., area. During medical school in 1952, the draft was still in effect but student deferments were not. Narva wrote to the Army, Navy, and Air Force, seeking a commission in the reserves. Within a week the Navy responded, and he enlisted as an ensign in the medical corps. "It's 60 years later and I still haven't heard from the Army and the Air Force," he quipped.

Narva accepted the dermatology training offered by the Navy, completing an internship at Bethesda and his residency at a naval hospital in San Diego. After a five-year tour at a naval hospital in Oakland he was named chief of dermatology at the National Naval Medical Center in Bethesda, Md. Within a week, Narva found himself in the bedroom of President Lyndon B. Johnson. Narva treated every president up to George H.W. Bush.

Narva continued his ascent with posts that included staff medical officer for the chief of naval operations, director of the Naval Reserve Division at the Bureau of Medicine and Surgery, and vice president of the Uniformed Services University of the Health Sciences (usu). Five years after being promoted to rear admiral in 1982, he was appointed attending physician to the U.S. Congress, which included members of the Supreme Court. He never expected to spend his entire career in the Navy but every time he thought of retiring, a new opportunity would arise. "In our practice, we were getting referrals from all over the world," he said. "Bethesda was a diagnostic center and there wasn't a day that went by that I didn't see something I had never seen before."

Except for a year in Vietnam in the mid-1960s, Robert Joy, M.D. '54, M.A., spent most of his 26-year Army career doing research stateside. Joy began his military career in the ROTC during medical school. He took an Army internship at Walter Reed Army Medical Center in Washington, D.C., not only because it offered excellent training, but also because he had a wife and baby—a standard internship paid \$50 a month, while the Army paid about \$250. Joy was founding commander of the Army Research Institute of Environmental Medicine in Natick, Mass., and held senior staff positions in medical research in the Office of the Army Surgeon General and the Office of the Secretary of Defense. In 1976, he became the first Commandant of usu in Bethesda, where he founded the Department of Medical

History in 1981. He has been professor emeritus at usu since 1996.

At 81, Joy still goes into the office one day a week. Looking back over his long career, what he enjoyed the most was tutoring, advising, and encouraging young men and women. Beyond that, Joy relished being in command. "There's nothing like it in civilian life," he said. In some aspects, however, the Army is not unlike other careers: "It's a system that's workable if you know how to work it," he said. "If you are respected for your work, are liked as a person, and are willing to be flexible, you can pretty much get what you want."

Not for everyone

For some alumni, military service was a way to finance their education and serve their country, but from the beginning they viewed it as a short-term commitment along the way to other career plans. John Lundell, M.D. '94, received an Air Force scholarship to attend the School of Medicine and owed five years of active duty after his residency ended in 1999. Two years later, the world changed abruptly; and both he and his wife, Andrea L. Lundell, M.D. '94, who was also in the Air Force, faced the possibility of simultaneous deployments. They had to arrange for relatives to care for their two young children in the event that happened. Andrea remained stateside, but John went to Iraq in 2003 as part of a mobile field surgical team. The next year he finished his commitment. Although he enjoyed his military service, he wanted an academic position and took a faculty spot at the University of California, San Diego, later moving to Baylor University in Dallas, where he has a private practice. "I got a lot of great experience at a young age and it gave me a lot of confidence," Lundell said.

Monika Dalrymple, M.D. '96, financed her Yale undergraduate and medical education by joining the Air Force ROTC. She owed eight years after graduating, but it turned into 12 when the Air Force required her to do a military (rather than civilian) residency in diagnostic radiology at Wilford Hall Medical Center at Lackland Air Force Base in San Antonio.

Neither Monika nor her husband, Neal Dalrymple, M.D., who also served in the Air Force, was ever called overseas. Neal finished his commitment just before 9/11, and Monika has a medical condition that exempts her from



COURTESY OF WILLIAM NARVA

William Narva, shown in 1963, treated every U.S. president from Lyndon Johnson to George H.W. Bush.

serving in a desert environment. But she worried that the Air Force would change the rules. She also found it difficult to manage child care for her young daughter because she had to be available 24/7 but never knew when she would get a call. "The military never really fit me personally," she said.

At West Point, an interest in medicine

Goss, currently a medical student, had no interest in the military until her family toured the Naval Academy in Annapolis, Md., during a vacation. After a pre-college summer program there, she entered West Point. During military training in the summer between her freshman and sophomore years, she got a blister that developed a MRSA infection. While she was in the hospital, the idea of being a military officer and a physician took hold. The summer between her junior and senior years she spent a month at Brooke Army Medical Center in San Antonio, where she worked with

Doctors in the Armed Forces

Monika Dalrymple, M.D. '96 joined the Air Force ROTC in college and served 12 years in the military. She presently specializes in gastrointestinal radiology within a group practice in San Antonio.

Mitchell Edson, M.D. '56 a captain in the Navy, practices four days a week at Washington Hospital Center in Washington, D.C., where he was chief of the urology residency program between 1978 and 1996. He completed residencies in surgery and urology at the St. Albans Naval Hospital in New York City, and was chair of the Department of Urology at the National Naval Medical Center in Bethesda, Md.

Martin Fackler, M.D. '59 served on a Navy transport ship at a Navy hospital in Da Nang, Vietnam, and in hospitals in Japan and Germany. After 20 years in the military he started and directed a lab for the study of gunshot wounds at the Presidio in San Francisco when it was an Army base. He is considered one of the world's foremost ballistics experts.

J. McLeod "Mac" Griffiss, M.D. '66 a retired colonel in the Army Reserves, is professor of laboratory medicine and chief of immunochemistry at the University of California, San Francisco, and a specialist in infectious diseases at the San Francisco VA Medical Center.

William Heydorn, M.D. '59 served in Army hospitals in Korea, Germany, and San Francisco. Heydorn now surveys hospitals for the Joint Commission International, an organization that accredits hospitals around the world.

Scott Hines, M.D. '99 served in the Navy before attending medical school. He saw combat in the first Gulf War as a fighter pilot and served in Iraq as a flight surgeon during the second Gulf War. He retired from the military in 2009 after 22 years of service.

Robert J.T. Joy, M.D. '54 served in the Army from 1954 to 1981 as a battalion surgeon and was founding commander of the Army Research Institute of Environmental Medicine. He held senior staff positions in medical research in the Office of the Army Surgeon General and in the Office of the Secretary of Defense. In 1981 he founded the Department of Medical History at the Uniformed Services University of the Health Sciences and became professor emeritus in 1996.

Craig H. Llewellyn, M.D. '63, M.P.H. retired from the Army as a colonel and now divides his time between Florida and Vermont. He is professor and chair of the Department of Military and Emergency Medicine at the Uniformed Services University of the Health Sciences School of Medicine; founding director of the Center for Disaster and Humanitarian Assistance Medicine; and a member of the executive committee of the National Disaster Life Support Educational Consortium. He also works with academic institutions as well as federal, state, and county organizations in organizing and teaching emergency medical preparedness.

John C. Lundell, M.D. '94 received an Air Force scholarship to attend medical school, as did his wife, Andrea L. Lundell, M.D. '94. John Lundell served in Iraq during the second Gulf War; he is presently practicing as an anesthesiologist in Dallas. Andrea Lundell practices radiology in Rockwall, Texas.

William M. Narva, M.D. '56 spent most of his 35-year Navy career in the Washington, D.C., area. He was staff medical officer for the chief of naval operations, director of the Naval Reserve Division at the Bureau of Medicine and Surgery, and vice president of the Uniformed Services University of the Health Sciences. Five years after being promoted to

wounded vets returning from Iraq and Afghanistan, including many amputees. “That experience sealed the deal for me,” she said. “Even the ability to pick up a fork or open a door had such an incredible effect on their spirit.” Back at West Point, she devoted her senior project to designing and building a “bionic” foot with a group of fellow cadets. The group incorporated a motor within the foot that engages when the patient steps down, creating propulsion to mimic a human gait. In May 2009, Sgt. 1st Class Patrick King, who lost his foot in Iraq, was the first to try the device, which will eventually be tested on other military amputees.

After medical school, Goss plans on doing her residency at a military hospital, after which she’ll owe 10 years of active service and six years of reserve service. She is leaning toward emergency medicine or orthopaedics, and is open to spending her entire career in the military. Like all physicians who enlist in the armed services in today’s

post-9/11 world, Goss has no choice but to reconcile herself to being deployed overseas, which she knew was a definite possibility when she enrolled at West Point.

Goss may find it difficult to imagine what awaits her. But Lionel Nelson is very clear regarding what he liked about serving in the military: “Besides the chance to see wondrous places far off the tourist trail and the chance to give back to the country,” he said, “it was almost always a great adventure, a significant sense of accomplishment, and rarely routine or dull.” **YM**

—Jill Max is a freelance writer in Trumbull, Conn.

rear admiral in 1982, he was appointed attending physician to the U.S. Congress, which included members of the Supreme Court. A specialist in dermatology, Narva treated every president from Lyndon B. Johnson to George H.W. Bush.

Lionel M. Nelson, M.D. '69 had no interest in the military until 1984, when he joined the local Army Reserve Special Operations Civil Affairs Unit in San Jose, Calif. After training as a flight surgeon he went on short missions in civil-military operations in Southeast Asia. In 2008 he volunteered for a mission in Iraq. He presently practices otolaryngology in San Jose.

Sunny Ramchandani, M.D. '04 is a lieutenant commander in the United States Navy. He is the integrated chief of general internal medicine at the Walter Reed National Military Medical Center. He deployed to Afghanistan as the Senior Medical Mentor for the Afghan National Security Forces in 2009, guided the execution of a new health care reconstruction strategy, and received the Bronze Star Medal.

Gabriel Rocha, PA-C '09 enlisted in the Army in 2002 and trained as a medic. In 2003, he was deployed to Baghdad and treated casualties from the bombing of the United Nations headquarters there. Rocha has since joined the Navy, where he will serve as a physician associate.

Benjamin D. Smith, M.D. '01, HS '06 served in the United States Air Force from 2006 through 2010, when he left with the rank of major. For four years he was a staff radiation oncologist in the Air Force. He is now an assistant professor in the Department of Radiation Oncology, Division of Radiation Oncology, at the University of Texas MD Anderson Cancer Center in Houston. In 2010 he received the Meritorious Service Medal from the Air Force.

Richard S.K. Young, M.P.H. '73, M.D. '73 a pediatric neurologist and chair of pediatrics at the Hospital of Saint Raphael in New Haven, is a colonel in the Connecticut Army National Guard. He has completed three tours in Iraq.

Heather C. Yun, M.D. '01 a major in the United States Air Force, is medical director of infection control at San Antonio Military Medical Center and assistant professor of medicine at the Uniformed Services University of the Health Sciences. She is also assistant chief of the Infectious Disease Service, San Antonio Military Medical Center; and associate program director of the Infectious Diseases Program, San Antonio Uniformed Services Health Education Consortium.



Are you working in military medicine or another of the fields we'll be profiling in our "Alumni Career Paths" series? Do you know medical school alumni, former Yale house staff, or fellows who are? Send us the names and then check the Web edition of *Yale Medicine* to view an expanding list of alumni with similar interests. You can write to us at ymm@yale.edu and view the list at yalemedicine.yale.edu.

"Alumni Career Paths" future articles:

- International health and research
- The front lines of clinical practice
- Academic medicine
- Physician/writers



Michael Schwartz



Scott Strobel



Jorge Galán



Haifan Lin



Hongyu Zhao



Paul Barash

New assistant dean for curriculum named

MICHAEL L. SCHWARTZ, PH.D., was named assistant dean for curriculum in October. Schwartz is an associate professor of neurobiology who has directed the core neurobiology course "Structure and Function of the Nervous System" since 1985 and has served as director of medical studies in the department since 1987. He was appointed director of medical courses for the School of Medicine in 2007 and has since chaired both the Course Review Committee and Course Directors Committee.

As assistant dean for curriculum, Schwartz will be responsible for overseeing the content, implementation, and review of the medical student curriculum, and for ensuring that it is designed and integrated to achieve the school's educational objectives as well as meet national accreditation standards. Schwartz will chair the curriculum committee and work with the directors of courses, modules, clerkships, and electives. In addition, he will play a vital role in implementing curriculum reform, which is part of the school's strategic plan for medical education.

New czar appointed to lead West Campus

SCOTT STROBEL, PH.D., the Henry Ford II Professor of Molecular Biophysics and Biochemistry, was appointed in December to succeed Michael Donoghue, PH.D., as vice president of West Campus Planning and Program Development. In this position Strobel will direct the second phase of growth at Yale's 136-acre facility in West Haven.

Donoghue, the G. Evelyn Hutchinson Professor of Ecology and Evolutionary Biology, developed the overall blueprint and launched many major initiatives at the site during his two-year term as the inaugural West Campus czar.

Strobel is an expert on the structure and function of RNA, a field in which Yale is a recognized world leader. He is also committed to improving education in the sciences. With a Professor Grant from the Howard Hughes Medical Institute, Strobel takes students to South American rain forests each year to collect materials for the isolation and study of new microorganisms. His goal for the West Campus is to take a stimulating environment for the study of science to a new level.

Ten Yale faculty members are among 214 new NARSAD Young Investigators to receive grants to pursue research related to schizophrenia, depression, bipolar disorder, autism, ADHD, and such anxiety disorders as OCD and PTSD. Each scientist will receive \$60,000 over two years. The researchers include:

Jessica A. Cardin, PH.D., assistant professor of neurobiology; **Silvia Corbera, PH.D.**, postdoctoral associate in psychiatry; **Janghoo Lim, PH.D.**, assistant professor of genetics; **Douglas J. Guarnieri, PH.D.**, associate research scientist in psychiatry; **Jason K. Johannessen, PH.D.**, assistant professor of psychiatry; **Roger J. Jou, M.D., M.P.H.**, clinical fellow in the Child Study Center; **Ruth Sharf, PH.D.**, postdoctoral associate in psychiatry; **Megan V. Smith, DR.P.H., M.P.H. '00, FW '09**, associate professor of psychiatry; **Bao-Zhu Yang, PH.D.**, assistant professor of psychiatry; and **Lingjun Zuo, PH.D.**, associate research scientist in psychiatry.

Three Yale faculty are among 503 members of the American Association for the Advancement of Science (AAAS) to be named AAAS Fellows this year for their distinguished efforts to advance science or its applications in society and public policy as well as in research and education. The new fellows received a certificate at the 2011 annual meeting in Washington, D.C., in February.

Jorge E. Galán, PH.D., D.V.M., chair of the Section of Microbial Pathogenesis, was honored for his contributions to the field of microbial pathogenesis and his studies of the interaction of enteric bacterial pathogens with their host cells. **Haifan Lin, PH.D.**, director of the Yale Stem Cell Center,

was honored for his contributions to stem cell research and developmental biology, particularly for work in stem cell niche theory and the regulatory role of small RNAs in stem cells and germ line development. **Hongyu Zhao, PH.D.**, the Ira V. Hiscock Professor of Public Health (Biostatistics) and professor of genetics and statistics, was honored for fundamental contributions to statistical genomics and genetic epidemiology, for outstanding service to the fields of statistics and human genetics, and for the training of many young scientists.

Paul G. Barash, M.D., professor of anesthesiology, received the Distinguished Service Award of the Society of Cardiovascular Anesthesiologists in recognition of his contributions both to the specialty of cardiac anesthesia and to the society—of which he is a founding member. Barash was recognized on the 50th anniversary of the founding of the University of Kentucky College of Medicine for his contributions to the field of anesthesiology through *Clinical Anesthesia*, the textbook for which he serves as senior editor. He is the only alumnus of the College of Medicine to be honored with both the Commonwealth Award of the University of Kentucky (2004) and the Distinguished Alumnus Award (2007).

Henry J. Binder, M.D., professor of medicine (digestive diseases) and of cellular and molecular physiology, was listed among the top 75 gastroenterologists in the country in November by *Becker's ASC Review*, a publication providing business, legal, and clinical news related to ambulatory surgery centers. Binder is also the



Henry Binder

Marna Borgstrom

Tobias Carling

Linda Degutis

Rosemarie Fisher

Thomas Gill

John Leventhal

winner of the 2005 Distinguished Achievement Award from the American Gastroenterological Association for his work on colonic enemas and diarrhea.

Marna P. Borgstrom, M.P.H. '79, president and CEO of Yale-New Haven Hospital, has been named to the Association of American Medical Colleges (AAMC) 2010–2011 board of directors. Borgstrom will serve a two-year term on the 17-member AAMC governing board, which represents all 133 U.S.-accredited and 17 Canadian-accredited medical schools.

Tobias J.E. Carling, M.D., PH.D., HS '02, FW '08, assistant professor of surgery, has been named the first Doris Duke-Damon Runyon Clinical Investigator, the Doris Duke Charitable Foundation and the Damon Runyon Cancer Research Foundation announced in June 2010. Carling will receive a total of \$486,000 over three years for his project titled "Molecular Genetics of Endocrine Tumor Disease."

Linda C. Degutis, M.S.N. '82, DR.P.H. '94, assumed the directorship of the Centers for Disease Control and Prevention's National Center for Injury Prevention and Control in November. As director of the injury center, Degutis will work to fulfill the agency's mission of preventing injuries and violence and reducing their long-term consequences. She was most recently research director of the Department of Emergency Medicine at the School of Medicine, and director of the Yale Center for Public Health Preparedness at the School of Public Health.

Rosemarie Fisher, M.D., associate dean and professor of medicine

(digestive diseases), received in September the highest honor bestowed on internal medicine educators, the Dema C. Daley Founders Award, by the Association of Program Directors of Internal Medicine at the association's spring meeting.

Thomas M. Gill, M.D., Humana Professor of Medicine (Geriatrics), was elected to the Association of American Physicians (AAP) during its annual meeting, held in Chicago in April 2010. The AAP is a nonprofit professional organization founded in 1885 for "the advancement of scientific and practical medicine."

Harlan M. Krumholz, M.D., M.Sc., the Harold H. Hines Jr. Professor of Medicine, has been invited to join the board of governors of the Patient-Centered Outcomes Research Institute (PCORI) of the U.S. Government Accountability Office. The Patient Protection and Affordable Care Act of 2010 established PCORI as a nonprofit organization to assist patients, clinicians, purchasers, and policy-makers in making informed health decisions.

John M. Leventhal, M.D., HS '76, professor of pediatrics, won a 2010 Ray E. Helfer Society Award for distinguished contributions to the field of child abuse and neglect in April 2010. The Helfer Society, named for the pediatrician who pioneered research on child abuse in the late 1960s, is a national honorary society for physicians who work in the field.

Thomas H. McGlashan, M.D., professor of psychiatry, has received three awards in the past two years: the Stanley Dean Award for research in schizophrenia from

the American College of Psychiatrists, the Richard J. Wyatt Award from the International Early Psychosis Association for research in early identification and treatment of psychosis, and the Award for Research in Psychiatry from the American Psychiatric Association for "significant contributions to our understanding of the impact of early detection and preventive interventions in schizophrenia." He has also been nominated to serve a four-year term as a member of the National Advisory Council of the National Institute of Mental Health.

Nancy A. Moran, PH.D., the William H. Fleming Professor of Biology, received the International Prize for Biology from the Japan Society for the Promotion of Science in December. Moran received the award for her work on symbiotic relationships between insects and the bacteria that live within them.

Charles A. Morgan III, M.D., associate clinical professor of psychiatry, received the 2010 Sir Henry Wellcome Medal and Prize from the Association of Military Surgeons of the United States in November. Morgan was honored for his article "Effect of Carbohydrate Administration on Recovery From Stress-Induced Deficits in Cognitive Function: A Double-Blind, Placebo-Controlled Study of Soldiers Exposed to Survival School Stress," which appeared in the journal *Military Medicine* in February 2009.

Marvin Moser, M.D., clinical professor of medicine, was honored by the American Society of Hypertension for his 50 years of achievements in research and treatment with the creation of

the Marvin Moser Clinical Hypertension Award.

Sara Rockwell, PH.D., professor of therapeutic radiology and of pharmacology, gave the 7th Robert F. Kallman Memorial Lecture at Stanford University in August. She also received the Distinguished Service Award from the Radiation Research Society at the society's annual meeting in Maui in September.

Clarence T. Sasaki, M.D., '66, HS '73, the Charles W. Ohse Professor of Surgery, has received the 2010 ALA Award from the American Laryngological Association for unique and significant contributions to the advancement of medicine. The American Broncho-Esophagological Association also honored Sasaki with the 2010 Chevalier Jackson Award for lifelong outstanding advancement in broncho-esophagology, the association's highest recognition.

Joan Steitz, PH.D., Sterling Professor of Molecular Biophysics and Biochemistry, was one of five panelists at a congressional briefing in September, "For Women in Science: 21st-Century Policy and Politics."

Bauer Sumpio, M.D., PH.D., HS '86, professor of surgery (vascular) and of diagnostic radiology, became president-elect of the New England Society for Vascular Surgery at its annual meeting in Rockport, Maine, in September.

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Shelf exams are the stuff of dreams

In the Class of 2013's Second-Year Show, faculty devise an alternate reality for the class president.

Anyone who mastered the convoluted plot of the Leonardo DiCaprio movie *Inception* would have had little trouble following the story line of *Staph Inception*, the Class of 2013's Second-Year Show. Loosely based on the movie, the show depicted faculty invading the dreams of class president Chris Sauer in the hope of persuading



TOP Stephanie Meller played Quinn, the high school crush of Chris Sauer, president of the Class of 2013, who played himself.

ABOVE Amanda Hernandez played the Lead Fashion Design Girl, who, at a career fair, tries to lure Sauer away from medicine and into the world of fashion.

RIGHT Sauer and cast in the show's finale.

him to support shelf exams—National Board of Medical Examiners standardized tests that students oppose.

The plot follows Sauer playing himself in videos and dance routines as a "Mysterious Girl" (played by Katherine Chau) lures him from Club Med to a clinical suite where faculty members chloroform him. They then use an inception device invented by the whiskey-swilling James Jamieson, M.D., Ph.D., head of the M.D./Ph.D. program (played by Graeme Rosenberg), to implant an alternate reality in his dreams. These dreams take Sauer back to high school and lead him on a different path through college and med school. His high school crush Quinn, played by Stephanie Meller, is really Nancy R. Angoff, M.P.H. '81, M.D. '90, HS '93, associate dean for student affairs. She's in cahoots with other instructors to steer Sauer toward support for the shelf exams.

As Sauer travels through four layers of dreams he must, among other things, choose between Quinn and singing in a boy band; attend a career fair; resist the temptation of a life of debauchery in fashion design; and finally be saved by a dream "defense" that was also implanted in his brain.

Charisse Mandimika was the show's executive producer and Misia Yuhasz was the executive director. Writers and directors included Yuhasz, Felicity Lenes, Greg Stachelek, Nick Theodosakis, and Brian Zhao.

—John Curtis



searches through the literature, the resident turned to "Dr. Google."

Her Web search—she Googled nausea, vomiting, and hot showers—unearthed the diagnosis. The patient was suffering from cannabinoid hyperemesis syndrome, a clinical condition linked to long-term marijuana use. The resident, Sanders said, succeeded where other physicians had failed because of her "willingness to become fully engaged with the problem, to take it on as a problem, to own it, to really figure it out."

"This commitment we make to our patients—to take on their problems—this is what makes us caregivers," Sanders said.

After Sanders' talk, Mary Warner, PA, M.M.Sc., director of the Physician Associate Program, and Dean Robert J. Alpern, M.D., Ensign Professor of Medicine, presented diplomas to the graduates on the stage of Woolsey Hall.

Three students received awards for exceptional performance: Matthew Brogan, PA-C '10, received the Dean's Academic Award; Heather Dobbin, PA-C '10, received the Dean's Clinical Award; and Megan Duet, PA-C '10, received the Dean's Humanitarian Award for outstanding service to others.

The Didactic Instruction Award, for dedication and excellence in the classroom, was given to John S. Francis, M.D., assistant professor of medicine. The Clinical Instruction Award, for exemplary teaching at a clinical rotation site, went to Hartford Family Medicine Center. The Jack Cole Society Award, for contributions in support of the physician associate profession, was given to Rita A. Rienzo, PA, M.M.Sc., assistant professor of medicine.

—J.C.

From a TV series, a physician offers a vision of "what makes us caregivers"

The fictional physician and title character in the television series *House* is no one's idea of a role model. "He's arrogant, a drug addict, a jerk, and an SOB," said Lisa Sanders, M.D. '97, HS '01, during her Commencement address to the 31 graduates of the Physician Associate Program in December. And she should know. Sanders, an assistant clinical professor of medicine, is a consultant to the show, which was inspired in part by her "Diagnosis" column for *The New York Times Magazine*. Yet despite this description of Gregory House, she said, "People come up to me and say, 'I wish my doctor was Dr. House.'"

The appeal of House, said Sanders, may be that although he hates patients, he loves diagnoses and wrestles with symptoms until he can make sense of them. House, she said, "embodies a willingness to get into the problem and fix the problem."

Sanders went on to describe a resident at Waterbury Hospital who reflected that persistence as she took on a patient whose case had perplexed other physicians for a year. The patient's frequent nausea and vomiting had forced her to drop out of the University of Connecticut. A half-dozen visits to the hospital and a full workup had yielded no insights into the problem. The resident found no obvious causes: the student was otherwise healthy, smoked and drank only occasionally, and was not pregnant. Only extremely hot showers relieved her symptoms. Finally, after countless



JOHN CURTIS (3)

TOP Dean Robert Alpern awarded a diploma to Courtney Johnson at the Commencement of the Physician Associate Program in December.

MIDDLE Ross Roberts looked on as Jamie Sun helped Adam Simon with his mortarboard before the start of Commencement in Woolsey Hall.

ABOVE Lisa Sanders, assistant clinical professor of medicine and author of the "Diagnosis" column in *The New York Times Magazine*, gave the Commencement address.



BILL JENNE

Yvette Fay Francis-McBarnette broke race and gender barriers at the medical school and in her career as a pediatrician. In the 1960s she launched the Foundation for Research and Education in Sickle Cell Disease.

Breaking barriers in medicine and race

The second black woman to enter the School of Medicine became a pioneer in sickle cell disease.

A medical student in a time charged with racial tension in America, Yvette Fay Francis-McBarnette, M.D. '50, echoes black Yalies before her who consistently reported getting along well with their white classmates. "We were a close-knit, supportive group," she said.

Perhaps this atmosphere motivated a 22-year-old Fay Francis, as she was known, to write a letter to the *Pittsburgh Courier* during her second year of medical school. "I have been urging all the prospective [black] medical students I know to apply," she wrote, "but most [feel] it would be a waste of time. This is not true." Francis-McBarnette concluded that as long as blacks were not represented in top schools, "the number of Negro doctors and nurses [would continue] decreasing."

The daughter of college-educated schoolteachers who emigrated from Jamaica, Francis-McBarnette always knew that she would go to college. After skipping several grades in school, she enrolled at Hunter College when she was just 14 and earned a bachelor's degree in physics in three and a half years. At 18, Francis-McBarnette was too young for medical school and unable to get a job in a lab in New York City. Those jobs were reserved for white applicants, she was told. So she got a master's in chemistry at Columbia instead. In 1946, at the age of 19, she was the second black woman to enroll at the Yale School of Medicine.

Despite her letter to the *Pittsburgh Courier*, Francis-McBarnette had no involvement in the civil rights movement. But in the medical profession, she broke barriers for women and blacks. While running a private pediatric practice, directing a clinic at Jamaica Hospital in Queens, and completing a second residency in internal medicine, Francis-McBarnette raised six children with her husband of 54 years, Olvin McBarnette, now a retired district superintendent for the New York City Board of Education. Among her children are three attorneys and a schoolteacher.

In medicine, Francis-McBarnette broke barriers for sufferers of sickle cell disease. She began using prophylactic antibiotics 15 years before their effectiveness was confirmed by an article in *The New England Journal of Medicine*.

Francis-McBarnette first heard of sickle cell disease and its mostly black victims in the 1950s during her pediatrics residency at Chicago's Michael Reese Hospital. The hospital, which closed its doors in 2009, served the city's black population, which was increasing due to the migration of African Americans from the South to the North. "I went home and tested all my relatives [for sickle cell]," she said.

In 1966, in private practice and an attending pediatrician at Jamaica Hospital, she launched the Foundation for Research and Education in Sickle Cell Disease with colleagues who included Doris Wethers, M.D. '52. The foundation was instrumental in opening the first comprehensive sickle cell clinic of which Francis-McBarnette became director.

The pediatrician was soon invited to Washington to sit on an advisory committee before then-President

Richard M. Nixon signed the National Sickle Cell Anemia Control Act in May 1972.

Since 1970 she had been successfully treating sickle cell children with prophylactic antibiotics. "I stayed on antibiotics for 35 years," said Cassandra Dobson, D.N.Sc., a lifelong patient of Francis-McBarnette, who started on the regimen in 1971. "If I hadn't, I would've died."

And by 1970, five years before New York State mandated the screening of infants for sickle cell disease, Francis-McBarnette's organization had already screened some 20,000 schoolchildren. That year in the May issue of the *Journal of the National Medical Association*, the doctor called for treatment that would allow those with sickle cell disease "to pursue their education, earn a living, and rear their families." These endeavors were unheard-of for sickle cell patients, who barely lived to adolescence when Francis-McBarnette started practicing.

"I was told I was going to die at 5, at 10, at every milestone of my life," Dobson said.

On the pediatrician's then-controversial advice that her patients do anything they wanted to do, including bear children, Dobson had children, became a registered nurse, and earned her doctorate in nursing. Francis-McBarnette recently attended Dobson's 50th birthday party, where Dobson said in a speech that she wouldn't be celebrating this milestone if it weren't for "Dr. Francis."

When Francis-McBarnette's first patients lived beyond age 18, Francis-McBarnette referred them to adult doctors, but they refused to go. "They don't know anything about me. I'm

staying right here with you," her patients told her. So in 1978, at age 52, Francis-McBarnette completed a residency in internal medicine and a fellowship in hematology at Bronx-Lebanon Hospital Center so that she could continue to care for her former pediatric patients.

Like Dobson, Maureen Michel has also been a lifelong patient of Francis-McBarnette. When she was visiting New York from Haiti in 1975, Michel, then 9 years old, was hospitalized. Now 44, Michel saw Francis-McBarnette until the doctor retired in 2000.

Today, in the course of searching for a new doctor, Michel still meets many who do not know what sickle cell disease is. "My whole life, every time I go to the emergency room, I call Dr. Francis. 'Do you think this medication is good for me?' When she retired, I didn't know if I would ever find any doctor like her, and to tell you the truth, I never have."

—Sonya Collins

A doctor and pilot's journey from a NYC housing project to Atlanta by way of Vietnam

Norman Elliott's journey to Yale began on a combat mission from Vietnam to the Philippines in 1972. A first lieutenant flying rescue for the Air Force during the Vietnam War, Elliott, M.D. '79, was evacuating a 17-year-old airman who'd attempted suicide by swallowing Drano. "I'd work with the physicians at stabilizing the patients. That was how I came to enjoy medical work," Elliott said.

The physician on that flight was Phil Steeves, M.D. '70. Elliott confided to Steeves that he would like to be a doctor, but at 23 and with several years of military service still ahead of him, "I thought I was going to be too old."

Steeves assured Elliott that there were plenty of older med students at Yale who'd come from other careers. Once back in the States and after five years of active Air Force duty, Elliott enrolled at the School of Medicine in 1975 and continued to fly for the reserves throughout his studies. While his classmates took trains to New York for the weekend, he jokes, he was often flying to Europe.

Today Elliott's life looks like childhood fantasies come true. The boy who grew up building model airplanes, watching *Sky King* on television, and reading the *Steve Canyon* comic strip in the projects in Queens, N.Y., has chased typhoons all over the Pacific and hurricanes through the Gulf of Mexico as a weather reconnaissance pilot. And he is fondly known as "Doc" to the Atlanta Braves, for whom he is now head team physician.

Norman Elliott started his career as a pilot in the Air Force, then switched to medicine. He is now the head team physician for the Atlanta Braves.



Elliott ended up in Atlanta by chance. The New Yorker always imagined the South as too rural for him, but after a short visit to Atlanta in 1978, Elliott said, "This is where I'm staying."

Upon graduation from Yale, Elliott went to Atlanta for his residency in internal medicine at Emory. He then became a flight surgeon at the School of Aerospace Medicine at Brooks Air Force Base in Texas in 1983 and joined the Alabama Air National Guard.

Following a fellowship in gastroenterology in Birmingham, Elliott returned to practice at Emory, all the while climbing the ranks of the Air National Guard to become Alabama State Air Surgeon and a brigadier general.

In 1992, Elliott was recommended by a colleague for a medical staff position with the Atlanta Braves. Hank Aaron, the Braves' senior vice president, wanted to address both a shortage of team physicians and a shortage of minorities in front office positions in major league

baseball. Elliott's partner learned about the opening and referred Elliott, who was offered the job by Aaron himself.

Elliott and four other internists split medical duties at 80 home games that require the presence of one internist and one orthopaedic surgeon. At any game, Elliott may take care of players on the visiting and the home team, their families, umpires, and front office staff. He attends to immediate medical needs, makes referrals, writes prescriptions, and conducts physicals at spring training.

Elliott's favorite part of the job is swapping stories with the pros. Once in the locker room after a game, "I was filling out some papers, and Bobby Cox, Jimy Williams, and Terry Pendleton saw me and said, 'Hey, Doc, come on over!'" Elliott couldn't believe these guys were inviting him to talk baseball with them. "This was the thing I worshipped. And these were the guys that knew."

Elliott grew up a Yankees fan, though his father loved the Mets. "I couldn't be a Mets fan. My father tried to take me to Shea Stadium, and I said, 'The Yankees aren't playing there.'"

Elliott is happy that his father lived to see him join the Braves. His father never made it to Atlanta for a game, but he waited for his son's calls afterward telling him "what really happened in the locker room. He loved that."

Elliott has raised two children in Atlanta—Jason, 25, and Kristen, 21—with his wife of 27 years, Pam, a special education teacher in the public schools. When he's not at a home game, Elliott sees patients at three hospitals and is a clinical assistant professor at Emory University and Morehouse School of Medicine.

Practicing in three regions as distinct as downtown Atlanta, the city's suburbs, and the rural foothills, Elliott likes most that he meets people from different backgrounds and helps reduce their suffering, as he observed Steeves doing on the flight to the Philippines nearly 40 years ago. As it turns out, Elliott got his first lesson in gastroenterology that day, and the 17-year-old airman lived.

—Sonya Collins

Familiar Faces

Do you have a colleague who is making a difference in medicine or has followed an unusual path since leaving Yale? We'd like to hear about alumni of the School of Medicine; Physician Associate Program; and the medical school's doctoral, fellowship, and residency programs. Drop us a line at ymm@yale.edu or write to Faces, Yale Medicine, 1 Church Street, Suite 300, New Haven, CT 06510.



Malin Dollinger



John Patti



Robert Posteraro



Tina Poussaint



Jennifer Blair and Roberto Cipriano

1960s

Malin Dollinger, M.D. '60, is now a medicolegal consultant after more than 40 years in practice as a medical oncologist. He is also co-editor of *Everyone's Guide to Cancer Therapy*, now in its fifth edition.

1970s

Stephen B. Arnold, M.D. '74, a cardiologist in the East Bay area, was honored by the American Heart Association in 2009 for outstanding contributions to reducing cardiovascular disease and building a healthier community. Arnold is an associate clinical professor of medicine at the University of California, San Francisco.

Duke E. Cameron, M.D. '78, '83, has been named cardiac surgeon in charge at the Johns Hopkins Hospital and director of the Division of Cardiac Surgery at the Johns Hopkins University School of Medicine. Cameron is also a co-director of the school's Heart and Vascular Institute, as well as the inaugural James T. Dresher Sr. Professor of Surgery and director of pediatric cardiac surgery. Cameron, who joined the Hopkins faculty in 1984, will also become director of the Dana and Albert "Cubby" Broccoli Center for Aortic Diseases.

John A. Patti, M.D. '71, was elected chair of the American College of Radiology (ACR) Board of Chancellors in May 2010 at the organization's 87th Annual Meeting and Chapter Leadership Conference in Washington, D.C. He will serve as chair from May 2010 to May 2011. Patti is a radiologist at Massachusetts General Hospital in Boston.

and a member of the faculty of Harvard Medical School.

Robert H. Posteraro, M.D. '73, a diagnostic radiologist, was named Outstanding Faculty Member of the Year in the Clinical Practice Management Program at Texas Tech University Health Sciences Center's School of Allied Health Sciences in Lubbock.

1980s

Lisa Matzer, M.D. '88, recently opened a new cardiology office in Burbank, Calif., where she specializes in preventive cardiology and women's cardiac health.

Tina Young Poussaint, M.D. '83, was elected president of the American Society of Pediatric Neuroradiology last year. Poussaint is an associate professor of radiology at Harvard Medical School and director of the Neuro-imaging Center of the Pediatric Brain Tumor Consortium at Children's Hospital Boston.

1990s

Owen Garrick, M.D. '98, M.B.A., is president-elect of the American Medical Association Foundation (AMAF). Garrick has served on the AMAF board of directors since 2004 and will assume the position of president on June 1 for a one-year term. He is chief operating officer of Bridge Clinical Research, based in Oakland, Calif.

Alexander P. Miano, M.D., HS '99, FW '00, was appointed medical director of psychiatric services in the emergency department of the University of Connecticut Health Center in Farmington in July. He will continue his practice in adult psychiatry in

the metropolitan Hartford area. He lives with his wife, Sharon, and their two sons, Michael and Scott, in West Hartford.

2000s

Jennifer M. Blair, M.D. '04, and Roberto Cipriano were married on September 5 in New Haven, Conn. Blair has worked as a writer in New Haven and New York City and as an emergency medicine physician in Illinois, Connecticut, and Maine. Blair and Cipriano, an architect, traveled to Indonesia in October, where they will spend two years as volunteers in the ASRI Clinic founded and directed by Kinari Webb, M.D. '02.

Candace Hillary Feldman, M.D. '08, M.P.H., and Evan Zane Macosko, M.D., PH.D., were married on May 23, 2010, in Tarrytown, N.Y. Feldman is a resident in internal medicine at Brigham and Women's Hospital in Boston and Macosko is a resident in psychiatry at Massachusetts General Hospital in Boston.

Kavita Mariwalla, M.D. '04, HS '08, FW '09, and Kabir Bhasin, M.D., HS '09, were married on June 5, 2010, in New York City. Mariwalla is the director of dermatologic and Mohs surgery at Beth Israel Medical Center and St. Luke's-Roosevelt Hospital Center in Manhattan. Bhasin is a cardiology fellow at Mount Sinai Medical Center in Manhattan. Members of the bridal party included

Thomas Fernandez, M.D. '05; **John K. Forrest, M.D.** '05; and **Jason Griffith, M.D.** '08.

Sean M. McBride, M.D. '08, and Blake M. Landro were married on October 16 in Boston at the Museum of Science. McBride

is a second-year resident in radiation oncology at Harvard. Landro is an advertising account manager for Google.

Sunny Ramchandani, M.D. '04, M.P.H., was named a White House Fellow in June 2010. Ramchandani is a lieutenant commander and physician in the U.S. Navy. He is the Integrated Chief of General Internal Medicine at the Walter Reed National Military Medical Center, where he co-founded a primary care delivery model that has been adopted by the U.S. Military Health System. He served in Afghanistan in 2009 as the senior medical mentor of the Afghan National Security Forces and received the Bronze Star Medal.

Curtis Weiss, M.D. '05, and Alexandra Block announce the birth of their son, Micah Block Weiss, on March 20, 2010. Mom, Dad, and Micah are doing well. Micah was so excited to meet everyone that he came two weeks early. Weiss is a pulmonary and critical care fellow at Northwestern University.

2010s

Elias N. Kassis, M.D. '10, and **Sylvia R. Baedorf, M.P.H.**, were married on June 5, 2010, in Geneva, N.Y. The groom is a resident at Massachusetts General Hospital and the bride is a research education manager at Boston University Medical Center.

SEND ALUMNI NEWS TO

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In Memoriam

Samuel D. Kushlan, M.D. '35, HS '38, a pathbreaking New Haven gastroenterologist and one of the oldest living alumni of the School of Medicine, died on October 16. He was 98. A mentor and role model for generations of physicians in training at Yale, Kushlan had continued to teach as a retired clinical professor of medicine until last summer.

Born in New Britain, Conn., in 1912, the son of Lithuanian immigrants, by the age of 10 Kushlan knew that he wanted to be a physician. He was admitted to the School of Medicine after his junior year at Yale College and, upon graduation in 1935, won the Campbell Prize, awarded to graduating students who secure the highest rank on Step Two of the National Board Examination. He conducted his student research and wrote his thesis under the supervision of Francis Gilman Blake, M.D., the chair of the Department of Internal Medicine and a world-renowned expert on infectious disease.

Following medical school, Kushlan trained as an intern and resident at what was then New Haven Hospital. His main diagnostic tools were the medical history and physical exam. X-rays were the only imaging technique available, and in those pre-penicillin days, the principal medications were aspirin, digitalis, phenobarbital, quinine, and morphine.

Except for a brief stint at Harvard in 1938, Kushlan spent his entire career at Yale. He established the Section of Gastroenterology in 1938 and was the first physician in Connecticut to perform gastroscopic endoscopy. For many years he maintained an active practice in New Haven and provided consultations throughout central Connecticut.

In 2001, Kushlan was awarded the medical school's highest honor, the Peter Parker Medal, and in 2003 the Connecticut Chapter of the American College of Physicians bestowed upon him its Lifetime Achievement Award. In 2007, he received the

Yale Medal in recognition of his innumerable contributions to his alma mater.

Robert W. McCollum Jr., M.D., PH.D., HS '51, a professor and dean of public health for almost 30 years who made significant contributions to the understanding of viral diseases, died of heart failure on September 13 at his home in Etna, N.H. He was 85.

In the 1950s, McCollum worked with a Yale team, led by Dorothy M. Horstmann, M.D., that used blood samples from polio patients to isolate the polio virus and discovered that before it reached the spinal cord and paralyzed patients, it circulated in the blood. That finding formed a basis for the development of polio vaccines. In 1982 McCollum left Yale to become dean of the Dartmouth Medical School, where he played a central role in the creation of the Dartmouth-Hitchcock Medical Center in Lebanon, N.H.

David F. Musto, M.D., HS '67, professor of psychiatry in the Child Study Center and professor of the history of medicine, died on October 8 in Shanghai, China. He was there for a ceremony marking the donation of his books and papers on the history of drug policy to Shanghai University and the establishment there of a Center for International Drug Control Policy Studies. He was 74. Musto, a member of the Yale faculty since 1969, was internationally recognized as an historian of drug policy.

Following his residency at Yale Musto served in the U.S. Public Health Service as special assistant to the director, National Institute of Mental Health, until 1969. He published widely on the social history of policies involving alcohol, narcotics, AIDS, and mental health

and is known for his study of drug policy, *The American Disease: Origins of Narcotic Control*, published in 1973.

He was a member of the White House Strategy Council on Drug Abuse Policy during the Carter administration, historical advisor to the U.N. Commission on Narcotic Drugs from 1978 to 1980, a member of the National Council of the Smithsonian Institution from 1981 to 1990, and historical consultant to the Presidential Commission on the Human Immunodeficiency Virus Epidemic. He also served on the National Advisory Committee of the Robert Wood Johnson Foundation's program to combat drug and alcohol abuse, was a charter fellow of the College on Problems of Drug Dependence, and was a member of the alcohol advisory committee of the National Association of Broadcasters.

We have also received word of the passing last year of the following alumni:

David A. Berkowitz, M.D. '69, died on October 28 in Newton, Mass. He was 66.

F. Calvin Bigler, M.D. '57, died on July 16 in Winfield, Kan. He was 78.

Levon Boyajian, M.D. '56, died on March 22 in Englewood, N.J. He was 80.

Stephen C. Cary, M.D. '61, HS '64, died on October 29 in Ashland, Ore. He was 78.

Robert V. Diserens, M.D. '58, died on November 8 in Phoenix, Ariz. He was 77.

Richard E. Dormont, M.D. '40, died on July 5 in Minot, N.D. He was 95.

Robert S. Easton, M.D. '45, died on January 6 at his home in Peoria, Ill. He was 88.

Lloyd D. Flint, M.D. '41, died on February 2 at his home in Myrtle Beach, S.C. He was 92.

Frank L. Golbranson, M.D. '47, died on January 10 in San Diego, Calif. He was 88.

Stanley I. Greenspan, M.D. '66, died on April 27 in Bethesda, Md., of complications from a stroke. He was 68.

William K. Hadley, M.D. '59, died on March 1 in San Francisco Calif. He was 81.

O. Roger Hollan, M.D. '45, HS '46, died on August 25 of complications related to heart disease. He was 87.

Robert L. Janco, M.D. '70, died on March 9 in Malvern, Pa. He was 66.

Haskins K. Kashima, M.D. '58, died on November 11 of complications from Alzheimer disease in Lutherville, Md. He was 78.

Jay W. Kislak, M.D. '58, HS '59, died on June 24 in Truro, Mass. He was 76.

Eugene G. McCarthy, M.D. '60, died on November 16 in New York City. He was 76.

William F. O'Connell, M.D. '45, died on September 29 in Red Bluff, Calif. He was 88.

Philip H. Philbin, M.D. '47, died of pneumonia on October 10 in Bethesda, Md. He was 88.

Jack S. Rice Jr., M.D. '64, died on November 5 in San Angelo, Texas. He was 71.

Lee S. Sannella, M.D. '40, died on March 19 in Santa Rosa, Calif. He was 93.

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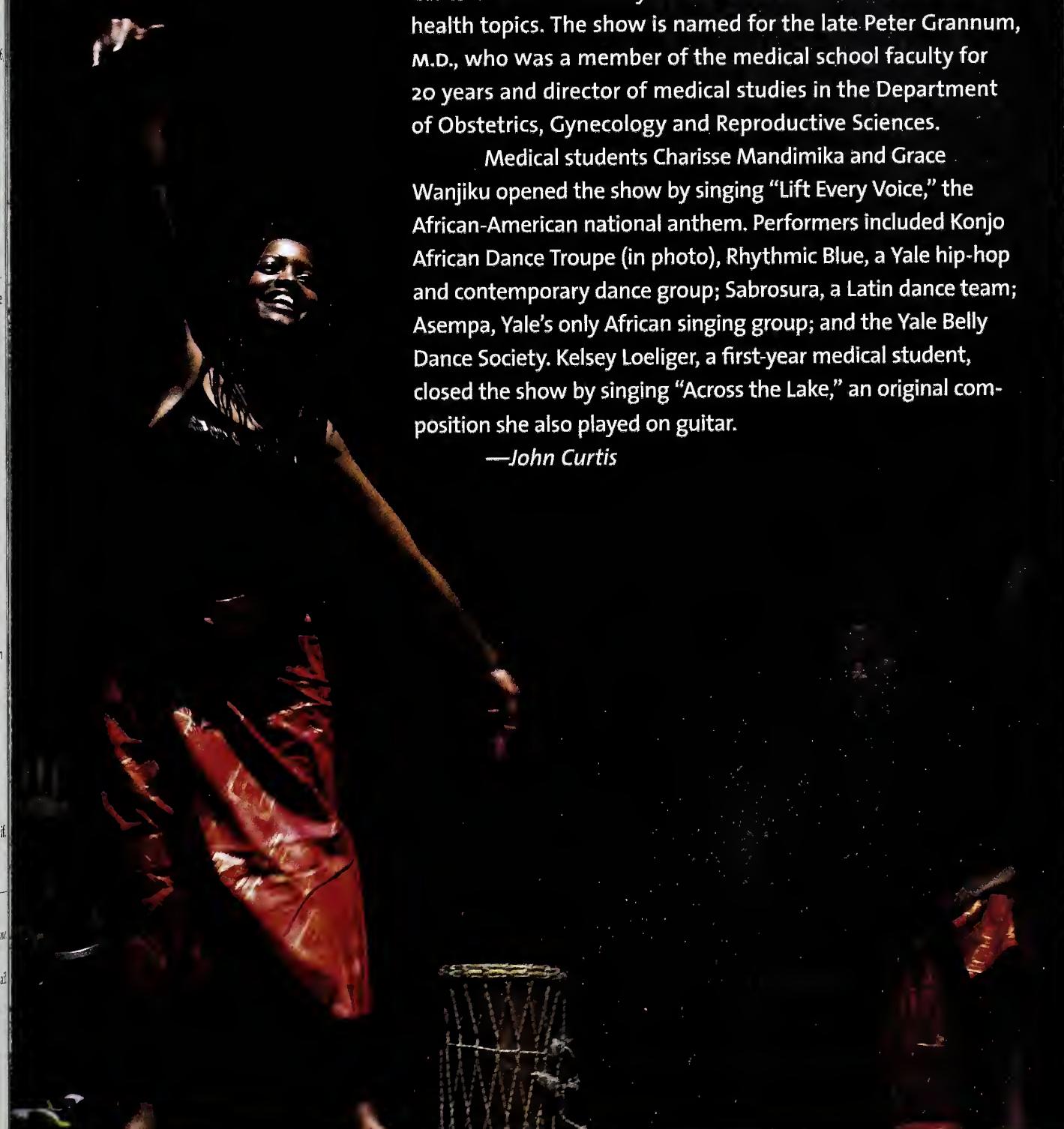
Singers, dancers raise money for HPREP

With the help of an assortment of singers and dancers, the 18th annual Grannum Talent Showcase raised more than \$3,000 on February 11 for the Health Professions Recruitment and Enrichment Program (HPREP).

HPREP is a 10-week program for area high school students in which minority medical students offer lectures on health topics. The show is named for the late Peter Grannum, M.D., who was a member of the medical school faculty for 20 years and director of medical studies in the Department of Obstetrics, Gynecology and Reproductive Sciences.

Medical students Charisse Mandimika and Grace Wanjiku opened the show by singing "Lift Every Voice," the African-American national anthem. Performers included Konjo African Dance Troupe (in photo), Rhythmic Blue, a Yale hip-hop and contemporary dance group; Sabrosura, a Latin dance team; Asempa, Yale's only African singing group; and the Yale Belly Dance Society. Kelsey Loeliger, a first-year medical student, closed the show by singing "Across the Lake," an original composition she also played on guitar.

—John Curtis



STEPHANIE ZOLLISHAN

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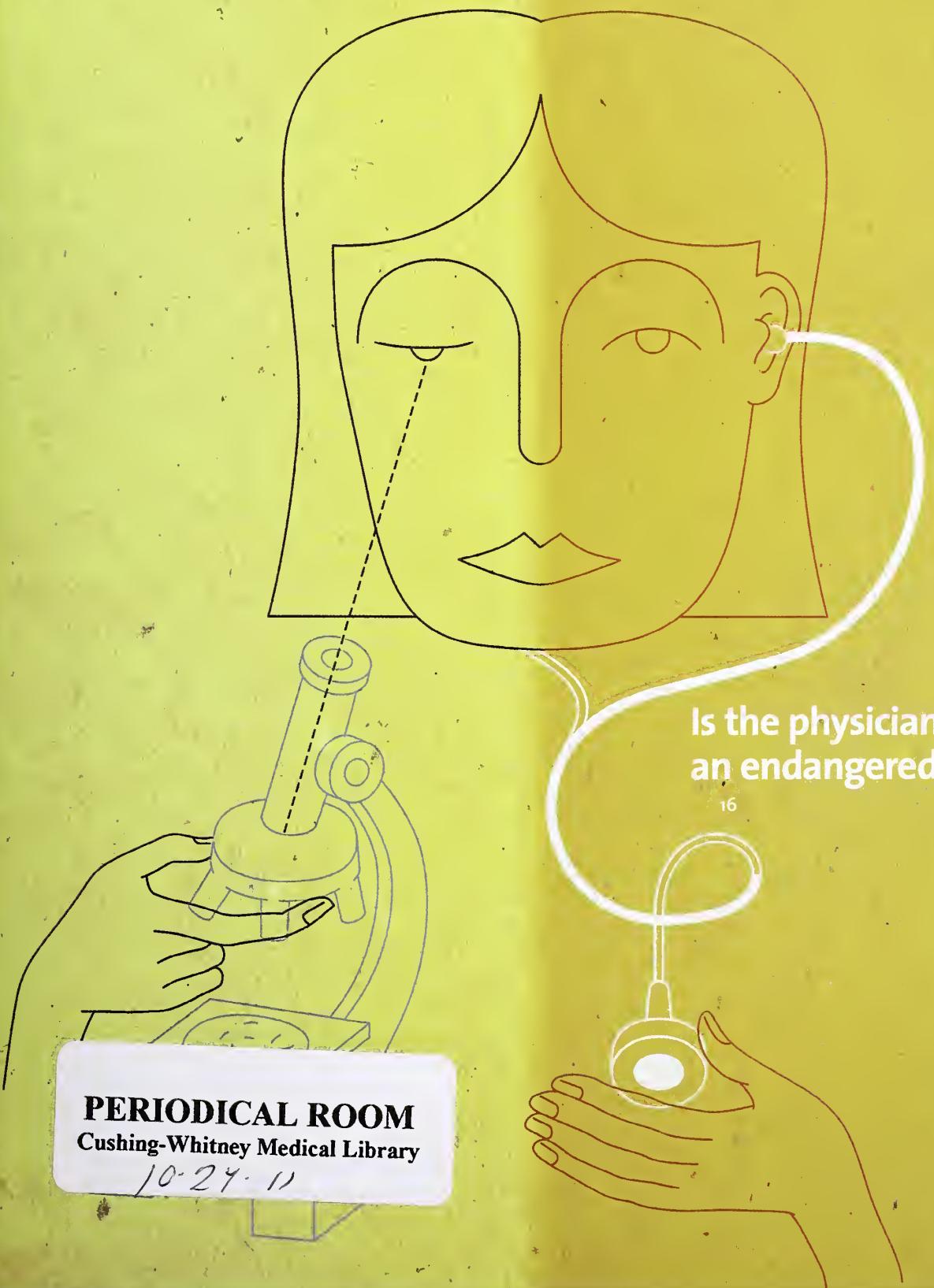
Local docs care for
the uninsured

autumn 2011

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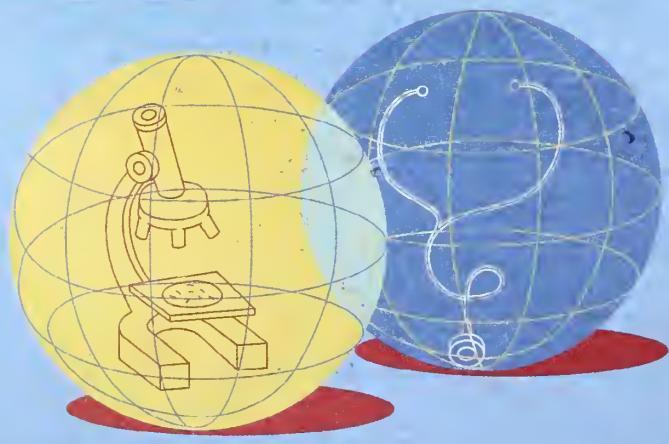


Is the physician-scientist
an endangered species?

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Illustration by Otto Steininger

**HOW TO REACH US**

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To serve this great nation

I particularly enjoyed the article on Norman Elliott, M.D. '79 [*Yale Medicine*, Spring 2011]. He is a distinguished School of Medicine graduate, and it pleases me to be reminded these many years later that I played a small part in his career.

I was an Air Force flight surgeon in the Vietnam War, which is how I first encountered Dr. Elliott. In addition to flying combat in supersonic fighters in that war, I served many years in the Air National Guard in tactical fighters (F-15s). I was fortunate to have had very interesting deployments—from the jungles of South America to the permanent ice of Antarctica (even the South Pole itself). I met many fascinating folks in our military service, but the warmest feeling as I look back is the opportunity I was given to serve this great nation—none of which would have occurred without the medical education I was privileged to have.

*Philip Steeves, M.D. '70
Wenham, Mass.*

On medicine and the military

I enjoyed your article on "Medicine and the military" [*Yale Medicine*, Spring 2011]. I had the privilege of working with Robert J.T. Joy, M.D. '54, while we were both at the Uniformed Services University of the Health Sciences at Walter Reed Army Medical Center. My time at the Yale School of Medicine has been one of the highlights of my educational career.

*Mahlon V.R. Freeman, M.D. '55
Col., U.S. Army Medical Corps Ret.
Denton, Texas*

Killing is never the goal

"Medicine and the military" [*Yale Medicine*, Spring 2011] reports an admissions interview at the School of Medicine in which a former Navy pilot's job was described as "to kill people." Perhaps the lack of ROTC at Yale is responsible for the persistence of such misinformed and distorted thinking.

Having testified dozens of times in courts of law defending law enforcement officers, I am familiar with such nonsense from plaintiffs' lawyers in trying to mislead a jury. In the military as in law enforcement, the "job" is saving the lives of the innocent by deterring violence and stopping aggression. True, some killing results; but everything possible is done to avoid it. Killing is never the goal.

*Martin L. Fackler, M.D. '59
Col., U.S. Army Medical Corps Ret.
Gainesville, Fla.*

Editor's note: In May, U.S. Secretary of the Navy Ray Mabus and University President Richard C. Levin signed an agreement to establish a ROTC unit at Yale—the Navy's only such unit in Connecticut. The first class of midshipmen will enter Yale in the fall of 2012.

A remembrance of the Cushing collection

An article in a previous issue ("Cushing collection once again open for research," *Yale Medicine*, Spring 2010) didn't mention that prior to being housed in the basement of Harkness Dorm, the Cushing collection was stored in rooms in the basement next to the neuropathologist's office down the hall from the morgue. While

I was attending Derby High School, I worked as a mortician's assistant to Frank and Walter in the morgue during the summers of the early 1950s. One of my jobs was to move the collection to the rooms beneath Harkness. I will never forget loading the jars containing the specimens onto the gurneys and wheeling them through the tunnel to their new destination.

*Walter W. Karney, M.D. '62
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Health care for the uninsured, and encouraging physician-scientists

Many physicians at the School of Medicine have devoted their time and skills to providing free care for the uninsured. But, as we learn in an article by Ayelet Amitay, M.S.N. '10, such efforts often ran into obstacles and could not always guarantee continuity of care. Now area doctors have founded a local chapter of the national organization Project Access. Project Access-New Haven recruits specialists to take on uninsured patients in New Haven and six neighboring towns. By handling paperwork, scheduling, and other administrative matters, Project Access ensures continuity of care and makes it easy for physicians to donate their services. Both New Haven hospitals support the program and provide ancillary services, including labs and tests. More than 300 area physicians have signed up since last year and more than 100 patients have received treatment.

Our cover story by Colleen Shaddox explores the status of physician-scientists. For almost four decades, concerns in the academy have focused on the difficulties of maintaining dual careers in science and medicine—including longer training periods and lower salaries than those of clinicians in private practice. And as a new generation with strong feelings about the balance between work and life enters the ranks of academic medicine, those concerns have intensified. A committee led by Peter Aronson, M.D., FW '77, the C.N.H. Long Professor of Medicine (Nephrology) and professor of cellular and molecular physiology, has been looking into the issue and seeking ways to encourage medical students and young doctors to take this career path.

John Curtis

Editor

SECOND OPINION BY SIDNEY HARRIS



"NOTICE? THEY'RE FEEDING US A LOT BETTER NOW THAT WE
MAY BE USED AS A SOURCE FOR TRANSPLANTS!"

Yale forms partnership to develop cancer drugs

Under the pact, Gilead Sciences can bring to market compounds discovered by Yale scientists.

Yale and Gilead Sciences, a biopharmaceutical company based in Foster City, Calif., announced in late March that they had forged a multi-year alliance to accelerate the discovery and development of drugs to treat cancer.

Over the next four years Gilead will provide up to \$40 million to support cancer research at the School of Medicine, and may provide up to \$100 million—the largest corporate commitment in Yale's history—over 10 years if the partnership is renewed in 2015. Yale will maintain ownership of all intellectual property generated by the medical school's research, and Gilead

will have the first option to license any compound it deems promising.

The partnership comes at a difficult time for drug development. Basic research conducted over decades is bearing fruit, but the cost of drug development has risen as clinical trials and regulations have grown more complex. The average cost to develop a single approved drug has risen to \$1.3 billion—a 60 percent increase since 2005.

"The collaboration brings together one of the world's top research universities and a biopharmaceutical company dedicated to addressing unmet medical needs, with the goal of finding new treatments for cancer," said Yale President Richard C. Levin. "This truly is transformative support that leverages Yale Cancer Center's top scientists, our West Campus technology investments, and the resources of the new Smilow Cancer Hospital."

The partnership benefits both industry and academia. Early-stage research carried out in settings like the School of Medicine is identifying more potential drug targets than ever. Research grants, however, are not designed to sustain the many additional steps involved in drug discovery. With the cost of bringing drugs to the

marketplace rising, pharmaceutical companies have become more selective about which targets to pursue. As a result, some pharmaceutical companies have been forming scientific alliances with universities.

The Yale-Gilead project will be governed by a joint steering committee chaired by Joseph Schlessinger, Ph.D., chair and the William H. Prusoff Professor of Pharmacology. The six-member committee will include Richard P. Lifton, M.D., Ph.D., chair and Sterling Professor of Genetics and a Howard Hughes Medical Institute investigator; and Thomas J. Lynch Jr., M.D. '86, the Richard Sackler and Jonathan Sackler Professor of Medicine, director of Yale Cancer Center, and physician-in-chief of Smilow Cancer Hospital. They will be joined by three Gilead scientists: Howard Jaffe, M.D. '82, president and chair of the board of the Gilead Foundation; William A. Lee, Ph.D., senior vice president, research; and Linda Slanec Higgins, Ph.D., vice president, biology.

Norbert W. Bischofberger, Ph.D., Gilead's chief scientific officer, said that collaborating with Yale dovetails with the company's renewed focus on oncology. "Based on the strong track record of the Yale cancer research team, I am confident this collaboration will lead to important advances in the understanding of the genetic basis of cancer as we collectively seek to develop novel targeted therapies for patients in areas of unmet medical need."

"When we find cancer targets that are new, we will work with Gilead on designing drugs, which they can then test in the clinic," Schlessinger said. "This is a tremendous opportunity for Yale and Gilead."

—Peter Farley



COURTESY OF GILEAD SCIENCES

Prime movers at Gilead Sciences in the new collaboration with the School of Medicine are (clockwise from left) Howard Jaffe, president and chair of the board of the Gilead Foundation; Linda Slanec Higgins, vice president, biology; and William Lee, senior vice president, research.

Army visits Yale to highlight its worldwide medical and humanitarian missions

To Afghan villagers, said General (Ret.) Stanley McChrystal, soldiers in combat gear, helmets, and body armor who don't speak the language, don't understand the culture, and race by in their armored vehicles "might as well be Martians."

McChrystal, former commander of U.S. forces in Afghanistan and now a senior fellow at Yale's Jackson Institute for Global Affairs, was a featured speaker at "Common Ground: Army Medicine in Support of Humanity," an event held in April to describe the Army Medical Department's humanitarian operations around the world.

"The ability to use medical relationships becomes extremely important," McChrystal told the audience in Harkness Auditorium. "I've watched coalition forces do everything from inoculations to basic checkups for kids, and it is something that breaks down the walls that can exist between us."

Col. Frederick C. Lough, M.D., who served at a military hospital in Afghanistan described some of the challenges facing military physicians. Although the hospital was near the historic city of Herat, the city was deemed too dangerous to visit, said Lough, now director of cardiac surgery at George Washington University Hospital. The military hospital was run by a Spanish contingent from

NATO but also staffed by Bulgarian and American physicians. Language was often an issue, said Lough, noting that the morning report was conducted in Spanish. The European doctors also differed in their approach to medicine and were less trusting of technology, he said. Although the team treated many Afghan civilians, the team members were often concerned about follow-up for serious conditions. "Then what? There is no rehab after care," he said.

A visit to a medical Deployable Rapid Assembly Shelter (DRASH) unit on display in Harkness Ballroom followed the talks in the auditorium. The unit—which can be up and running in an hour and includes a surgical bed as well as an assortment of essential medical equipment—represents the next level of care after battlefield treatment. Injured soldiers would be moved from the DRASH to a field hospital and then to the Army's regional medical center in Landstuhl, Germany.

Maj. Michael Filipowicz, the officer in charge of a medical recruiting station in Wallingford, Conn., said his goal in organizing the event was to build a relationship with Yale. "I am trying to break down the walls of misunderstanding and to promote the humanitarian missions that we do, and enlighten everyone that we're not just about taking care of soldiers, but taking care of civilians around the world," he said.

—John Curtis



JOHN CURTIS

Peter Arnold, a nurse anesthetist, explains the workings of the DRASH unit to a visitor.

et cetera...

SCHOLARSHIP FUND HONORS ALUMNUS

Boston Scientific, a developer, manufacturer, and marketer of medical devices, established in February a \$1.7 million scholarship endowment for the School of Medicine. The Donald S. Baim, M.D. '75, Scholarship Fund will honor the late cardiology pioneer who served as Boston Scientific's chief medical and scientific officer from 2006 until his death in 2009.

A Donald S. Baim Scholarship will be awarded annually, beginning in August 2011, to a first-year student to cover half of tuition for all four years of medical school. The School of Medicine will seek candidates based on financial need and demonstration of the intellectual and clinical excellence that Baim's career exemplified.

Baim had been an expert in interventional cardiology during his 25 years at Harvard Medical School, Beth Israel Deaconess Medical Center, and Brigham and Women's Hospital in Boston before joining Boston Scientific.

—J.C.

HOSPITALS EXPLORE MERGER

Yale-New Haven Hospital (YNHH) and the financially troubled Hospital of Saint Raphael (HSR) announced in March that they are exploring a possible merger. YNHH would buy HSR's assets and invest about \$135 million in capital improvements to produce an integrated hospital with two campuses. The integration would create cost and operational efficiencies.

Employees of HSR would most likely become part of the combined hospital; YNHH would provide pay and benefits consistent with those of YNHH employees in similar positions. The merged institution would continue to honor HSR's Catholic heritage.

"With the prospect of significant health care changes on the horizon, hospitals across the nation are exploring innovative ways to enhance access to high-quality care while driving down costs," said Marna P. Borgstrom, M.P.H. '79, president and CEO of YNHH.

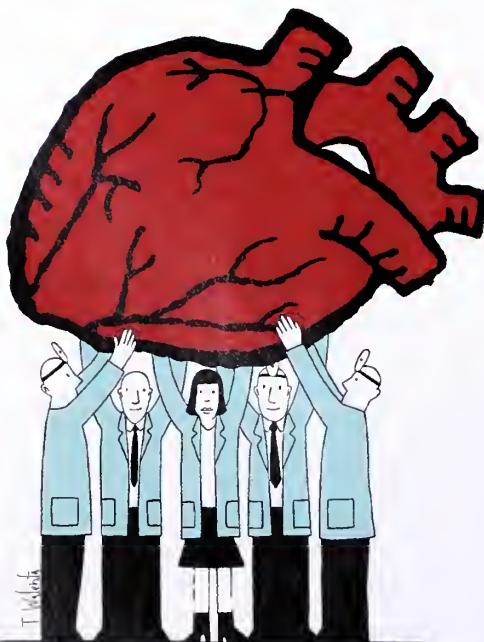
"The proposed integration is in the best interest of this community, our patients, and our two organizations," said Christopher M. O'Connor, president and CEO of HSR.

—J.C.

Teamwork and collaboration lead to better medical care in hospital settings

Being a good team player may make all the difference when trying to save patients suffering from heart attacks. Top-tier hospitals with low acute myocardial infarction (AMI) mortality rates achieve those results not only through state-of-the-art care but also because they foster a work atmosphere in which people combine their talents and strive toward a common goal, according to a study published in the March 15 issue of the *Annals of Internal Medicine*.

"While protocols and processes are important for AMI outcomes, it really is critical to pay attention to the environment in which those are implemented," said Leslie A. Curry, M.P.H., Ph.D., research scientist at the School of Public Health and lead author of the paper.



Curry and her colleagues found that hospitals with the lowest AMI mortality rates exhibit a "positive culture" characterized by shared organizational values and goals; consistent involvement of senior management; broad staff presence and expertise in AMI care; effective communication and coordination among interdependent groups; and an approach to problem solving that emphasizes learning and growth. In low-performing hospitals, they found, staff often work in isolation, communicate poorly with members of the multidisciplinary health care team, point fingers when problems arise, and have no common vision regarding delivery of excellent health care.

"The importance of a positive culture has not been highlighted in the medical literature or in medical education, and our study may be heralding a factor that is as powerful as any new treatment," said co-author Harlan M. Krumholz, M.D., M.Sc., the Harold H. Hines Jr. Professor of Medicine.

Surprisingly, the Yale investigators did not find any specific process or protocol, such as the use of rapid response teams or clinical guidelines, which differentiates high- from low-performing hospitals. "We may know what to do given current evidence, but how we provide care may also be very important," Krumholz said. "An environment of coordination, communication, and collaboration may make a difference in making sure that mistakes are avoided and treatments achieve their promise."

Researchers focused on improving the quality of health care have long sought to identify the factors that distinguish top-performing hospitals with stellar heart attack survival records. Prior studies, however, have failed to identify a silver bullet. The Yale group took a decidedly different approach with a provocative methodology called positive deviance. This approach examines exceptional performance (so-called positive deviance) to understand how it leads to high

outcomes relative to others. The Yale team explored myriad aspects of the hospital setting qualitatively rather than quantitatively—an approach that better reveals the importance of social interactions and organizational culture, which are difficult to measure using common research methods like surveys. "The nice thing is that we discovered a lot of approaches that do not require huge financial investments, which bodes well for improving quality without increasing costs," said Elizabeth Bradley, M.B.A., Ph.D. '96, professor of public health and a co-author of the paper.

The Yale group is now validating their initial qualitative findings, culled from 11 hospitals that ranked in either the top or bottom 5 percent in risk-standardized mortality rates, by conducting a nationally representative survey of more than 500 U.S. hospitals to identify and confirm specific hospital behaviors that promote positive AMI outcomes. "Soon we'll be able to give hospitals more concrete advice about actions they can take to provide quality AMI care," said Curry.

—Kara A. Nyberg



Refugee clinic fills needs for both patients and physicians-in-training

When Sachin Jain, M.D., M.P.H., asked his patient about her eating habits, she consulted with her interpreter, who answered, "A typical Iraqi diet."

"What's that?" Jain pressed, eliciting a list that included meat, starch, vegetables, and fried foods.

He then asked questions that don't usually come up in a medical visit: Had she ever been a victim of violence? Ever witnessed it? Did she feel safe now?

Jain is one of the resident coordinators of the Adult Refugee Clinic, which serves eight patients each week in Yale-New Haven Hospital's Primary Care Center. (A pediatric refugee clinic, which provides medical screening and primary care for children in newly arrived refugee families, shares the space.) About 200 refugees settle in Greater New Haven each year, with Iraqis forming the largest group. The refugees also come from such countries as Afghanistan, the Democratic Republic of Congo, Cuba, Ethiopia, Iran, Somalia, and Sudan.

The adult and pediatric clinics offer physicians-in-training an opportunity to see latent tuberculosis, various parasitic infections, and undiagnosed congenital disorders—diseases and conditions that are relatively rare in the United States. For the residents, however, the most important lessons involve communication. Understanding the patient's story is essential to providing care, many clinic staffers said, and language is only part of the challenge.

Intern Sara Schwab, M.D., groaned on a recent shift when told she'd be

using a phone interpreter—it's always better to have a live interpreter in the room because they can pick up on nonverbal cues like body language. Schwab walked toward the exam room asking people, "You don't speak Arabic, do you?"

But whether on the phone or in person, standard questions can be mired in misleading assumptions. For example, a physician might ask, "Have you ever been hospitalized?" But in some countries hospitalization is a rare event. "There is a lot more detective work," said Katherine Yun, M.D., HS '09, a postdoctoral fellow who serves as an attending in the Pediatric Refugee Clinic.

The adult clinic got its start in 2007 when Teeb Al-Samarrai, M.D. '06, HS '09, who was born in Iraq, was recruited to translate in the pediatric clinic during her residency. Al-Samarrai, now a CDC Epidemic Intelligence Service Officer at the New York City Department of Health and Mental Hygiene, learned that refugee patients often ended up in the emergency room because it was difficult to get appointments with primary care providers. An adult refugee clinic at Yale had closed when its organizers left the medical school, so Al-Samarrai recruited residents and faculty to fill the need. Last year, the adult clinic became part of the ambulatory care curriculum so that it will have ongoing coverage.

That reorganization creates an opportunity for residents not only to treat a diverse population but also to change the way they interact with all their patients. Jain recalled a lifelong New Haven resident who had various complaints and a reputation for non-compliance. "I went into my refugee line of questioning," Jain said. The patient recounted an adolescence marred by violence and memories of being mistreated by the health care system.

Symptoms that had frustrated other doctors suddenly made sense to Jain, who had finally gotten the whole story.

—Colleen Shaddox

et cetera ...

GHRELIN LEVELS LINKED TO FERTILITY

Mice whose mothers had low levels of ghrelin are less fertile and produce smaller litters, Yale researchers reported in the May issue of *Endocrinology*. Such hormones as ghrelin, which are involved in energy balance, hunger regulation, and metabolism, have also been shown to regulate reproductive function in humans. Ghrelin levels are typically low in obese women.

The Yale team studied the effects of ghrelin deficiency on the developmental programming of fertility in female mice, noting that abnormal functioning of uterine tissue led to lowered rates of embryo implantation.

"While our study involved mice, we believe our findings have significant implications for women," said lead author Hugh S. Taylor, M.D., HS '92, FW '98, professor of obstetrics, gynecology, and reproductive sciences. "Our results suggest that low ghrelin levels could program the development of the uterus in the female children of obese women. These women may then be less fertile as adults."

—John Curtis

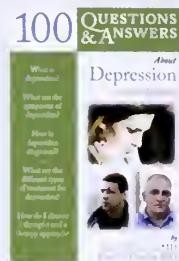
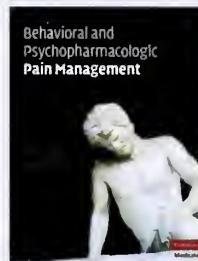
EXOME SEQUENCING YIELDS TARGET GENE

Yale researchers have identified genetic mutations that can trigger severe hypertension through tumor formation in the adrenal gland—in a gene they had no plans to study, according to Richard Lifton, M.D., PH.D., chair and Sterling Professor of Genetics, professor of medicine, and corresponding author of a paper published in the February 11 issue of the journal *Science*.

"This gene was not on anybody's list to sequence in an investigation of this disease," said Lifton, who is a Howard Hughes Medical Institute investigator. "We really hit the jackpot." The findings are a major step in understanding the causes of high blood pressure, which afflicts one out of every three Americans.

Lifton and his team, which included investigators from Uppsala University in Sweden, New York Medical College, and Henry Ford Hospital, found the mutations using whole-exome sequencing—a technique that decodes all of a patient's genes rather than just a few suspect gene targets.

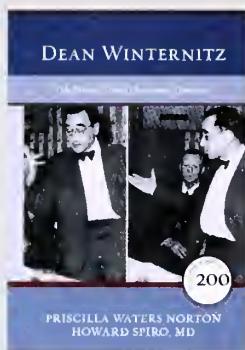
—J.C.



The legacy of Milton Winternitz

A new book honors the achievements of the dean who led the medical school at a crucial time.

The man who laid the foundation of the modern School of Medicine has been largely forgotten, says Howard Spiro, M.D., professor emeritus of internal medicine (digestive diseases). And yet, as the dean of the medical school from 1920 to 1935, Milton C. Winternitz, M.D., created a legacy that touches every student and faculty member who walks along Cedar Street.



Dean Winternitz: Yale Medical School's Passionate Humanist

Published by the Program for Humanities in Medicine, New Haven, Conn., 2010. Available from Amazon in paperback and in Kindle format.

The book describes how the dean employed "superhuman energy" to introduce psychiatry at Yale, to strengthen ties with New Haven Hospital, and to grant relative autonomy to students who were "here to learn rather than to be taught." He established the short-lived Institute of Human Relations to advance "social medicine," a progressive interdisciplinary approach that drew on law and sociology as well as medicine, and took into account the socioeconomic, psychological, and spiritual aspects of illness.

The authors also describe the fallout from the dean's caustic personality, including his forced resignation from the deanship in 1935.

A decade after the 1910 Flexner Report revealed shortcomings in medical education nationwide, [Winternitz] "saved the medical school from becoming a second- or third-rate place."

—Cathy Shufro

Behavioral and Psychopharmacologic Pain Management

edited by Michael H. Ebert, M.D., professor of psychiatry; and Robert D. Kerns, Ph.D., professor of psychiatry, psychology, and neurology (Cambridge University Press) This book discusses the theory and evidence-based practice of behavioral, psychotherapeutic, and psychopharmacological treatments in modern pain medicine. The book reflects the interdisciplinary approach considered the current standard for the practice of pain management and can be used as a textbook for specialized training in the field. Contributors span the fields of psychiatry, psychology, anesthesia, neurology, nursing, and physical medicine and rehabilitation.

100 Questions and Answers about Depression, 2nd ed.

by Ava T. Albrecht, M.D., assistant clinical professor of psychiatry; and Charles Herrick, M.D. (Jones & Bartlett Publishers) Incorporating the views of patients as well as doctors, this guide presents information about the causes of depression, treatment options, and coping techniques. The book addresses risk factors associated with depression, brain stimulation therapies, and physiological drug dependence.

Oxford American Handbook of Cardiology

edited by Jeffrey R. Bender, M.D., Robert I. Levy Professor of Medicine (cardiology) and professor of immunobiology; Kerry S. Russell, M.D., Ph.D., associate professor of medicine (cardiology); Lynda Rosenfeld, M.D., associate professor of medicine (cardiology); and Sabeen Chaudry, M.D., senior

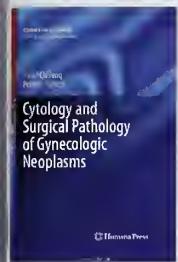
fellow of medicine (cardiology) (Rowman & Littlefield) The text covers common cardiac conditions, including coronary artery disease, arrhythmias, valvular and congenital heart disease, cardiomyopathies, and heart failure, and includes a chapter on preventive cardiology. The handbook also includes practice guidelines, management strategies, and a summary of recent major clinical trials in cardiology—all designed for use by residents, fellows, students, and general practitioners.

Cytology and Surgical Pathology of Gynecologic Neoplasms

edited by David Chhieng, M.D., professor of pathology; and Pei Hui, M.D., Ph.D., associate professor of pathology (Humana Press) This text provides a reference for practicing pathologists and cytopathologists with a focus on gynecological tumors, specifically common ones and their benign mimics. Topics include morphologic recognition, resolving common diagnostic problems seen in routine practices, and a discussion of the current classification of gynecologic malignancies. The book also addresses the practical applications of such ancillary studies as molecular diagnostic testing and immunohistochemistry.

Sleep: An Issue of Clinics in Chest Medicine

edited by H. Klar Yaggi, M.D., M.P.H., associate professor of medicine (pulmonary), Teofilo L. Lee-Chiong Jr., M.D., and Vahid Mohsenin, M.D., professor of medicine (pulmonary) (Saunders) Sleep medicine topics covered in this special issue of the journal include the neurobiology of



sleep, adult obstructive sleep apnea (OSA), central sleep apnea (including complex sleep apnea and ASV), pediatric sleep-related breathing disorders, hypoventilation syndromes, metabolism in OSA, cardiovascular consequences of sleep apnea, home sleep apnea testing, insomnia, excessive sleepiness, narcolepsy, restless leg syndrome and movement disorders, the parasomnias, circadian rhythm sleep disorders, medication effects on sleep, and polysomnography.

Infertility

edited by Emre Seli, M.D., associate professor of obstetrics, gynecology, and reproductive sciences (Wiley-Blackwell). The authors provide a strong focus on effective diagnosis and management of infertility, assisting gynecologists and family practitioners to improve the care of patients who have trouble conceiving. Following a review of the factors affecting fertility, the book discusses evaluation of fertility, management and treatment, complications, preimplantation screening, and fertility preservation. The volume is part of the publisher's *Gynecology in Practice* series.

Three Boys Like You

by William M. Gould, M.D. '58 (iUniverse.com) Robert, Tony, and Philip believe that their friendships will last forever, but they are wrong. In 1949, the three high school boys engage in a prank that unexpectedly deteriorates into a crime. An innocent man is blamed. The novel shows how each of the three deals with the moral ramifications of his actions. Together again as adults in the midst of

civil war in Guatemala, the three men find that the past intrudes on the present as their personal values clash. Will Robert, Tony, and Philip move beyond their haunted memories? Will they have futures at all?

Visual Fields: Examination and Interpretation, 3rd ed., edited by Thomas J. Walsh, M.D., clinical professor of ophthalmology and visual science and of neurology (Oxford University Press). This edition contains revisions and updates of earlier material as well as a discussion of newer techniques for assessing disorders of the visual field. It provides an overview of the techniques of visual field examination in a number of eye disorders and will be of interest to ophthalmologists, neuro-ophthalmologists, retina specialists, and optometrists. The book begins with a short history of the field of perimetry and goes on to present basic clinical aspects of examination and diagnosis of visual field defects in the optic nerve, optic disc, chorioretina, optic chiasm, optic tract, lateral geniculate field bodies, and the calcarine complex. It includes a discussion of several new techniques of automated perimetry.

The descriptions above are based on information from the publishers.

SEND NOTICES OF NEW BOOKS TO Cheryl Violante, *Yale Medicine*, 1 Church Street, Suite 300, New Haven, CT 06510, or via e-mail to cheryl.violante@yale.edu

Health and social justice are connected

As in the days of the "robber barons," today's North American philanthro-capitalists have enormous influence over the global health agenda, convinced that a businesslike approach can resolve social problems more effectively than government or civil society, said Anne-Emanuelle Birn, SC.D., professor and Canada Research Chair in International Health at the University of Toronto. Speaking to this year's Downs Fellows in March, Birn said that philanthropic work has often promoted short-term, narrowly technical approaches that favored donor interests over local needs. A costly Rockefeller Foundation campaign to eradicate yellow fever in Mexico in the early 1920s, she said, was of minor local importance but eliminated a public health threat to ports in the United States.

Birn argued that global health efforts should not be separated from addressing poverty and social injustice. For example, in Sri Lanka, Cuba, and Costa Rica, maternal and child health improvements have been coupled with women's empowerment, fair-wage movements, universal education, and other elements of a welfare state. "There is a reality that the philanthrocapitalists reject," she said, "that health, well-being, and social justice are inextricably integrated."

—John Curtis

Transformative moment for health care

Although the 2010 Patient Protection and Affordable Care Act faces legal and political challenges, it provides, said Howard Koh, M.D. '77, M.P.H., a "transformative" moment.

"All patients want good care, good insurance so they can get good care, and not to be patients in the first place," said Koh, assistant secretary for health at the U.S. Department of Health and Human Services, when he delivered the Herbert Goldring Memorial Lecture for the Department of Pediatrics in April. Noting that the act includes 10 titles, or sections, Koh said, "The law puts those 10 titles together in a unified package to give patients what they want."

The act expands coverage for young adults, provides tax credits for small businesses to help purchase coverage for employees, guarantees coverage for children with pre-existing conditions, closes the Medicare "donut hole" (coverage gap) for prescription payments, provides preventive care, and promotes public health. A similar program in Massachusetts, where Koh was commissioner of public health from 1997 to 2003, "has driven down the rate of the uninsured to 2.5 percent, the lowest in the country," he said.

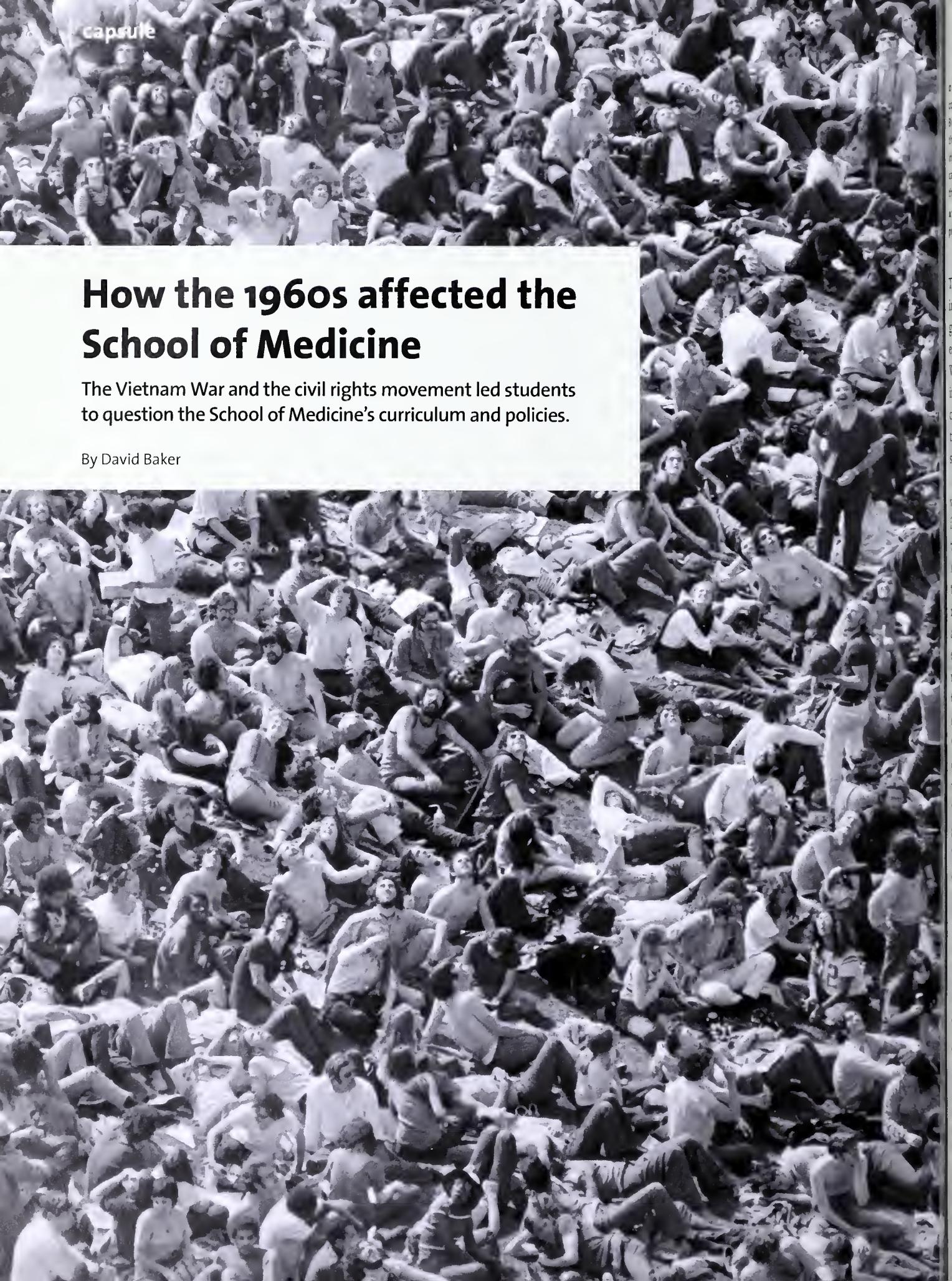
"We are at a historic time as to the status of this law," Koh said. "It is a moment that gives us an extraordinary opportunity to make our country healthier by 2020 and beyond."

—J.C.

How the 1960s affected the School of Medicine

The Vietnam War and the civil rights movement led students to question the School of Medicine's curriculum and policies.

By David Baker



OPPOSITE In May 1970 thousands of students converged on New Haven to protest the trial of Black Panther leader Bobby Seale, on charges that he was involved in the killing of a suspected informant. The School of Medicine did not escape the era of protests, as students questioned the curriculum and administration policies.

AT RIGHT A poster for the May Day 1970 protest in New Haven.

The Yale School of Medicine was not immune to the student protests that gripped the country in the 1960s and early 1970s. Opposition to the Vietnam War and increasing criticism of social injustice led to questioning of the medical school's curriculum and administrative policies, culminating in a student strike in the spring of 1970.

In September 1968, the school had yielded to students' desire for more flexibility and compressed the time allotted to preclinical and clinical instruction, leaving the fourth year open for electives. The thesis, required for the Yale medical degree since 1839, seemed archaic to students eager to shift the emphasis in their education from research to healing and activism, but the administration held firm and maintained the requirement. Students welcomed the introduction that year of a six-week clinical rotation during the summer after the first year. Free to choose their own summer programs, many students ventured into urban community health centers or American Indian reservations.

Yale medical students also organized independently to respond to the social challenges of their profession. The Student Health Project was founded at Yale in 1969 to enact reforms in medical education and broaden the role of medicine to encompass individual community service projects.

New Haven became a center of nationwide attention in May 1970 when demonstrators protested the upcoming trial in the city of Black Panther leader Bobby Seale on charges that he had been involved in the murder of a Panther suspected of being an FBI

informant. The Panthers were believed by many to be targets of oppression by law enforcement, and sympathizers considered the case against Seale weak.

Medical students had expressed support for the Panthers in the fall of 1969 but did not immediately endorse a call for a university-wide strike.

Undergraduates voted to strike in April 1970, and an estimated 75 percent of Yale College classes were canceled.

University President Kingman Brewster's statement of sympathy for the protestors' views at a faculty meeting on April 23, 1970, had a calming effect on the student body. The main rally on the New Haven Green on May 1 attracted an estimated 15,000 persons—far fewer than expected—and there were no significant violent incidents despite incendiary speeches by Yippie leaders Abbie Hoffman and Jerry Rubin.

During the two days of protests, some faculty and students from the School of Medicine, including members of the Medical Committee for Human Rights, staffed impromptu People's First Aid Stations in Yale's residential colleges to treat the effects of tear gas or other injuries, which were rare and mostly minor.

Medical students voted to join the university-wide strike on May 6, 1970, following the U.S. invasion of Cambodia on April 29 and the shooting of four students by Ohio National Guardsmen at Kent State University on May 4. Medical students agreed to suspend classes and other scheduled activities, while also arranging to meet with faculty during the strike to ensure maintenance of professional standards and such obligations as patient care.



The same spirit of compromise marked such other instances of student activism following May Day 1970 as the deliberations concerning academic governance. Students had in preceding years gained membership on the faculty Curriculum Committee as well as on the Student-Faculty Hospital Committee and a board to recruit underrepresented minorities to the student body. In 1970 the students attempted to gain an equal voice in deciding admissions, promotions, and graduation standards. The Committee on Governance, a faculty body, resisted this effort while creating a Medical School Council composed of students and faculty, "to provide an influential forum for discussion of significant School-wide issues." After its founding in 1970, the Council continued to meet for more than 30 years, evolving gradually into a speakers' forum for the exchange of information about current events within the school and across the medical profession.

This article has been adapted from *Medicine at Yale: The First 200 Years*, a book celebrating the bicentennial of the Yale School of Medicine.



Medical care for the uninsured

Local physicians launch a chapter of a national program that provides free specialty care to those in need.

By Ayelet Amitay, M.S.N. '10
Photograph by Robert Lisak

Germán León's left eye was bothering him. It was swollen and although it didn't hurt, it got tired when he was reading. He wanted the swelling to go away.

León, 39, lives with his wife and three children in Fair Haven. He makes sandwiches at a New Haven coffee shop, but his job provides no insurance coverage. In April he was in a second-floor office at the Hospital of Saint Raphael (HSR) in New Haven, where Edna L. Cruz-Cedeño, a patient navigator, was determining his eligibility for treatment through Project Access-New Haven (pa-nh.org/).

As she explained to León, Project Access offers free medical care to the uninsured by recruiting physicians who offer their services at no charge. During the interview, Cruz-Cedeño's goal was to determine whether León is eligible to receive care under Project Access. Patients must live in New Haven or one of its six contiguous towns. They must be without health insurance and their income must be no more than 250 percent of the federal poverty level. They must provide proof of residency and income. And their medical situation must fit within the project's guidelines.

Cruz-Cedeño asked León about his medical history. Does he have a history of alcoholism? Arthritis? Cancer? Diabetes? High cholesterol? Asthma? "We are the first contact the patient will have," she said. "We'll get a referral. One of our on-call doctors reviews it. We will do the initial screening, financials, location; make sure they qualify; provide appointment information and reminders, follow-up, and communication with specialists."

León qualified for the program and received an appointment at a private ophthalmology practice in New Haven. "After the visit, Project Access will receive the specialist return form from the physician," said Giselle Carlotta-McDonald, a patient navigator who followed up the case the next day. "The form will specify what the next step will be for the patient, such as if they will need any lab work, imaging tests, medication, or follow-up appointment. It will also let us know if the patient doesn't need any further treatments."

Once accepted, patients receive a Project Access ID card valid for six months, which they present at each medical appointment. Physicians commit to seeing the patients through their treatments. HSR and Yale-New Haven Hospital (YNHH), which support the program, assume responsibility for ancillary care—including costs for lab work, imaging, operating rooms, and physical therapy. And the program takes advantage of prescription assistance from pharmaceutical companies.

Project Access-New Haven is one of 55 chapters of a nationwide program designed to provide specialty care to the uninsured. More than 250 physicians in the New Haven area have signed on to the program since it began operations in 2010.

"It's a no-brainer," said Peter J. Ellis, M.D., M.P.H., director of the fourth-year primary care clerkship at the School of Medicine, and one of the program's founders. "Once physicians hear about the project, they say yes."

PREVIOUS PAGE Peter Ellis and Suzanne Lagarde joined forces to launch a local chapter of Project Access, a national organization dedicated to providing free medical care for the uninsured.

An epiphany in Mississippi

The story of New Haven's chapter of Project Access begins in Mississippi in 2006, when Suzanne P. Lagarde, M.D., HS '77, FW '80, was on a church trip to rebuild houses after Hurricane Katrina. "My skills were far greater in medicine than they were in Sheetrock," said Lagarde, assistant clinical professor of medicine. So she walked down the street to the Coastal Family Health Center in Biloxi and volunteered her services as a GI specialist.

Among her many uninsured patients was a man with rectal cancer. The diagnosis took only 30 minutes, but Lagarde spent hours calling hospitals, only to learn that the earliest appointment for treatment was eight months away because the patient had no insurance. "These people have nothing for specialty care," Lagarde said, "But if all the hospitals had were uninsured patients, they couldn't survive either."

This story is as familiar to physicians in New Haven as it is to those in Mississippi. As Connecticut's unemployment rate rises—it reached 9.6 percent in February—people are losing health insurance along with their jobs. Despite the passage of the 2010 Patient Protection and Affordable Care Act, an estimated 14.9 percent of New Haven residents—more than 19,000 people—remain without health insurance. Unable to access regular medical care, they often put off treatment or turn to emergency rooms when their medical problems can no longer be ignored. On her return to New Haven, Lagarde wondered what she could do to help the uninsured here.

Then she heard about Peter Ellis. He had recently begun working in New Haven after several years in Waterbury, where he had organized a chapter of Project Access. A nationwide program founded in 1996, Project Access provides gap coverage for patients who cannot afford health insurance but aren't eligible for such public programs as Connecticut's State Administered General Assistance (SAGA) or Medicaid. By providing patients with pro bono primary care until they meet spend-down limits to qualify for SAGA, Project Access helps end the cycle of repeat visits to the emergency room. Ellis and Kevin D. Carr, M.D., HS '02, an internist and attending physician at Waterbury Hospital, launched Connecticut's first Project Access in Waterbury in 2004.

Tackling health care in New Haven

Lagarde thought that she and Ellis would work well together—he had the experience in setting up the program,

and she knew the political/medical landscape of New Haven. They worked with Yale's Robert Wood Johnson Clinical Scholars Program to analyze the problem. The Scholars' answer was clear. "Doctors can't get patients into specialty care," said Scholar Katherine Goodrich, M.D., FW '10.

"Right now," explained Steven Wolfson, M.D., past president of the New Haven County Medical Association, Project Access board member, and associate clinical professor of medicine (cardiology) at Yale, "seeing uninsured patients happens piecemeal, in private in doctors' offices. But then we get stuck—what do we do when they need a service we can't provide? It's hard enough to do pro bono work without these roadblocks in the way."

Such roadblocks take their toll. Although physicians like Wolfson continue to provide free care to the uninsured, according to a 2006 report by the Center for Studying Health System Change, a nonpartisan policy research organization in Washington, D.C., physicians are donating fewer hours of charity care and fewer physicians are choosing to provide this care than was the case in the 1990s. In 2005, about 68 percent of the physicians surveyed donated time to uninsured patients, down from 76 percent in 1997.

Katrina Clark, M.P.H. '71, director of the Fair Haven Community Health Center, said efforts by physicians on behalf of individual patients are crucial but do not address the global need for an organized and consistent means of providing the uninsured with health care. The barriers that doctors and their patients face are mostly organizational, according to Clark. If a patient does get an "uncompensated care" appointment at YNHH, communications between primary care doctors and specialists often falter, resulting in poor continuity of care. And many physicians, said Erica Spatz, M.D., a Robert Wood Johnson Clinical Scholar, don't provide specialty care to the uninsured. "So then it falls to a small group of physicians to attend to those patients, and they get asked again and again, so wait times increase."

"We don't want a little more free care for a few more people a month," Clark said. Instead she and her colleagues are hoping for a systemic change in providing uninsured patients continuity of care and access to all the services they need.

As Peter N. Herbert, M.D. '67, HS '69, senior vice president for medical affairs and chief of staff at YNHH, phrases it, "Physicians, we want philanthropy from you in the form of your care, but it won't be such that it will bankrupt you."

Project Access encourages doctors to take on a few patients—usually two or three per month—to ensure that no individual care provider must bear an overwhelming burden. “We look for parity, because no good deed goes unpunished,” said Patrick Curley, Project Access’ executive director.

Patients have responsibilities, too. There is a two-strike policy in place to reduce the number of no-show appointments and wasted resources. “You miss one appointment, that’s fine,” said Curley. “Two strikes, you’re out.”

According to Curley, each patient case will have between eight and 10 “touch points,” or points of contact with the patient navigator. “It is our goal to try to get them their care in a reasonable amount of time,” he said.

These contact points also allow Project Access staff to measure the project’s impact, Ellis said. “How many patients have you seen? What is the quality of care? Are you impacting the number of ER visits? Everyone wants to save money, and there is a lot of interest in using patient navigators to keep people out of the hospital,” he said.

“We want to measure who does what when, every time a doctor saw someone and something was done,” said Curley. “We want to know the value of work that has been done.”

Support for Project Access comes from New Haven’s two hospitals, such donors as the Community Foundation for Greater New Haven, and the medical staffs at both hospitals. HSR has provided office space and computers for an executive director, a consultant who recruits physicians, and two patient navigators—one full- and one part-time—who steer patients to volunteer specialists. Originally referrals came only from the health center in Fair Haven; in its first few months Project Access enrolled 102 patients. “It just seemed natural to start small,” said Ellis. Now the program is accepting referrals from the emergency department at YNHH and the primary care clinic at HSR. YNHH is also providing 3.5 staff positions to support and monitor the program. The hospitals stand to benefit from the program as well. Studies around the country have shown, said Curley, that each dollar spent on the program saves at least \$5 in the emergency department.

For physicians in the emergency room, Project Access fills another need. Ian Schwartz, M.D., HS ’06, medical director of the emergency department at YNHH, said that of the 80,000 adult visits each year, only 20 or 25 percent qualify as true emergencies. Many patients come because they lack insurance or because they can’t get an appointment for urgent

or specialty care through their primary care provider. “We need to make arrangements, whatever their problem is, to get them followed on an outpatient basis so they’re not right back in the emergency department a few days later with another problem,” Schwartz said. “We aspire to deliver the highest quality care to our patients, whether they’re admitted to the hospital or go home. We are a triage center and a diagnosis center, but there’s a next step of really good outpatient care—aggressive care—that’s needed. We spend a large amount of time trying to make sure that there is a reasonable, practical outpatient plan.” Through Project Access, Schwartz said, emergency room physicians can arrange follow-up care that might not otherwise be possible.

Stephanie L. Arlis-Mayor, M.D., director of the outpatient clinic at HSR, said that Project Access ensures that patients are better able to navigate the health care system. “It allows our patients to be seen in the right place by the right person at the right time,” said Arlis-Mayor, who also sits on the Project Access board. “That’s advantageous to any health care system. It decreases the stretch and stress on the resources. There are cost savings overall because patients are being seen in the ambulatory world, where it’s far less expensive to see patients than it is in the emergency or inpatient world.”

“Project Access will not cure all the ills of people,” said Herbert. “But it is an approach to a certain segment of the population that could make a specific difference. That’s why [Project Access] deserves the full support of the hospital and the community, because they represent all that is good about medicine.” **VM**

—Ayelet Amitay is a 2010 graduate of the Yale School of Nursing. Additional reporting by John Curtis.



Is the physician-scientist an endangered species?

Citing the dearth of role models, burden of debt, and long periods of training, a committee looks for ways to encourage medical students to pursue dual careers.

By Colleen Shaddox

Illustrations by Otto Steininger

One of the challenges of interviewing Danny Balkin is that he keeps asking the questions—about the writing process, the state of journalism, and the quality of frozen yogurt purveyors in New Haven. If there is such a thing as a born investigator, Balkin is one. The M.D./PH.D. student's face widens into a kid-in-a-candy-store smile as he talks about the possibility of harnessing his laboratory's basic research to benefit families whose sons have Lowe syndrome—a rare X-linked genetic disorder that causes mental retardation, kidney disease, and cataracts in boys.

Balkin works in the lab of Pietro De Camilli, M.D., Eugene Higgins Professor of Cell Biology and professor of neurobiology, on research intended to illuminate the mechanisms of Lowe syndrome. That connection to real-life patients is critical for Balkin, as it has been for generations of physician-scientists who tailored their investigations to solve clinical problems. Yet voices in the medical and research communities have warned of a looming shortage of physician-scientists since the 1970s. From 1983 to 1998, according to a 2002 article in *The New England Journal of Medicine*, the percentage of physician-scientists in the United States dropped from 4 percent of the total number of doctors to 2 percent.

Still, much of the evidence surrounding the issue remains anecdotal. Moreover, as Ann C. Bonham, PH.D., chief scientific officer of the Association of American Medical Colleges (AAMC), asks, just what is a physician-scientist? Bonham believes that the definition goes beyond simply physicians with dual degrees. "Having a broad

definition of physician-scientists is very important," she said. "We have come to think about it as physicians who are engaged in some form of science—whether it's basic science, clinical research, health outcomes research, community-based participatory research, or prevention research."

However the group is defined, the importance of the physician-scientist in medicine is more than just academic. This dual role brings an important perspective to research. "The thing that's so irreplaceable about physicians is that they approach research questions differently because they are inspired by their personal experience taking care of patients," explained Andrew I. Schafer, M.D., chair of the department of medicine at Weill Cornell Medical College. In 2009 Schafer edited *The Vanishing Physician-Scientist?*, a collection of essays by academic physicians and physician-scientists from more than a dozen institutions. For the record, the question mark in the title is significant. "I actually think that they are not going to vanish," he said, but shoring up the vocation of physician-scientist will take a lot of work. "We, the community of academic medicine, are going to have to make some major, major changes."

"We're at risk of having two separate worlds that don't interact—the research world and the clinical world," warned Dean Robert J. Alpern, M.D., Ensign Professor of Medicine. The physician-scientist is an effective bridge between those worlds, he said, adding that any drive to increase the numbers of physician-scientists is "going to have to come from schools like Yale."

Barriers to physician-scientists

A Yale committee chaired by Peter S. Aronson, M.D., FW '77, the C.N.H. Long Professor of Medicine and professor of cellular and molecular physiology, spent much of 2010 devising strategies to promote student interest in the physician-scientist career track at Yale. To be sure, the medical school already offers students opportunities in research. Medical students must write a thesis based on original research in order to graduate. Each year the school also admits about a dozen M.D./PH.D. candidates. In 2006 the school began offering a master's degree in health science (M.H.S.) to students who engage in full-time research for at least two years, meet coursework requirements, and complete either a laboratory-based or clinical thesis project. Since then, eligibility for the M.H.S. degree has been extended to participants in the Robert Wood Johnson Clinical Scholars Program, the YCCI/CTSA Scholars Program, and the Department of Surgery Residency Program. Other clinical departments are also seeking approval to enroll interested residents and fellows.

Yet the Aronson committee's final report, issued in September 2010, identified a number of barriers to those wishing to pursue dual careers: extra years spent in training at lower pay; the burden of medical school debt; the underrepresentation of physician-scientists on medical school admissions committees; a dearth of physician-scientists on bedside teaching rounds; and a disproportionate tendency for women—who represent half of M.D. and M.D./PH.D. students—to leave research at all stages of their careers. (Schafer also notes that as young scientists and doctors of both genders strive for “work/life balance,” traditional career paths must be reevaluated.)

The report made a number of recommendations, including tracking the careers of medical school alumni. “There should be systematic collection and analysis of data on careers of Yale graduates with respect to measures of success as physician-scientists (e.g. grants, academic positions, citations),” the document says. “It is also important to compile easily accessible data on student demographics and experiences while at Yale (e.g. time in research, type of research, funding of mentor, advanced degree programs, elective courses, etc.) so that these variables can be correlated with career outcomes.”

At the heart of the report were recommendations for encouraging physician-scientist careers while students are still

at the medical school. Because of Yale's thesis requirement, research is already a part of student life—the Office of Student Research matches students with faculty investigators and helps them find funding for research projects. More than half of Yale medical students opt to spend a fifth year on research—but John N. Forrest Jr., M.D., HS '67, professor of medicine, director of the Office of Student Research, and a member of the Aronson committee, worries that the extra year is becoming a necessity as research time within the four-year curriculum is shrinking. “It's fallen because good things have been put in the curriculum,” he said, noting that summer clerkships are now available to students who might otherwise have spent those months doing research. Over the past 20 years, according to the committee's report, the time available for research over four years has decreased from 11 months to 6 months.

The group's recommendations include calls for more guaranteed time for research throughout the four-year curriculum, loan forgiveness for medical school graduates who meet such career benchmarks as a K08 or K23 award from the NIH, elective courses relevant to basic and clinical research, an enhanced advisory system for students interested in physician-scientist careers, and greater integration of faculty who are physician-scientists into clinical teaching programs.

The report also proposed the creation of “Summer Zero,” a six-week program before medical students begin their first year at Yale. The program, to be called START@Yale (Summer To Advance Research Training at Yale), would come with a stipend and would feature a hands-on research experience. It would also include lectures and discussions of topics in laboratory and clinical research, with an emphasis on the importance of research in advancing patient care. “It is a great concept and means that the students' first exposure at the School of Medicine would be in hands-on research” Forrest said.

Growing the M.D./PH.D. program

The dean's office is still considering the specifics of the committee's recommendations. “If I had an infinite amount of money,” Alpern said, “I'd probably do everything in the report.”

“All of this stuff costs money,” sighed James D. Jamieson, M.D., PH.D., professor of cell biology, director of the M.D./PH.D. program, and a member of Aronson's committee. The committee suggested an expansion of the M.D./PH.D. program, which provides full support for its students. A majority of them go on to faculty positions and obtain research grants.

“The thing that’s so irreplaceable about physicians is that they approach research questions differently because they are inspired by their personal experience taking care of patients.”

Andrew Schafer, M.D., chair of medicine at Weill Cornell Medical College



“We’re at risk of having two separate worlds that don’t interact—the research world and the clinical world.”

Dean Robert Alpern, M.D.,
Ensign Professor of Medicine

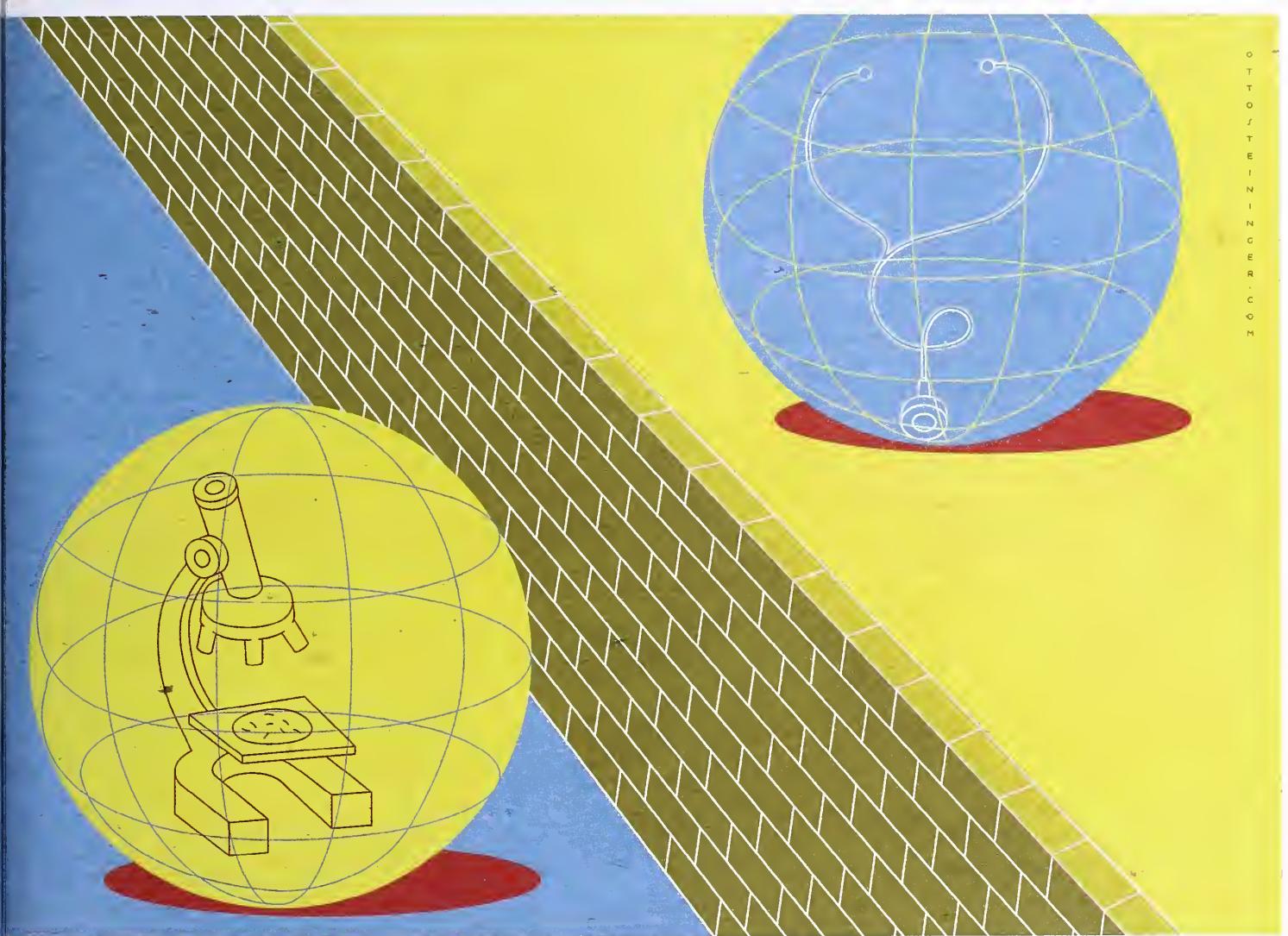
“We are committed to helping the M.D./PH.D. program grow,” said Carolyn W. Slayman, PH.D., Sterling Professor of Genetics, professor of cellular and molecular physiology, and deputy dean for academic and scientific affairs. There’s a consensus among chairs, she said, that it would be ideal to expand the program from about 12 percent to between 15 and 20 percent of each class. “It’s something that Yale does very well,” she said.

Part of that success comes from choosing the right type of student from the start, said Jamieson. “These are people who ask questions and have the best interests of their patients at heart,” he said. He’s a zealous advocate for weighing research experience heavily at admission and for rigorous science throughout the curriculum. “You’re teaching people how to bloody well think—not to memorize facts!” But Jamieson admits that flat government funding is a hurdle for young physician-scientists, and not one that individual medical schools can easily move aside. Without a nationwide investment in research, he predicts that the best and brightest investigators will pursue careers overseas.

The AAMC’s Bonham sees some bright spots on the horizon for up-and-coming physician-scientists. The health care reform bill passed in 2010 created the Patient-Centered

Outcomes Research Institute, charged with setting priorities for comparative effectiveness research. “That kind of research will need physicians and physician-scientists, and there is dedicated funding,” Bonham said, adding that this field of research also creates new collaborative niches outside the traditional bounds of laboratory or clinical research. “There will be opportunities for engaging medical students, fellows, and junior faculty in comparative effectiveness research,” she said. “That necessarily implies teams with health outcomes researchers, clinicians, nurses, social scientists, and implementation scientists.”

Yale does have several programs in place to aid junior faculty in establishing themselves as researchers who’ll be competitive for NIH funding. Getting started, warned one leading researcher, can be daunting. “You need about four or five years of concentrated investigation in your field of interest,” said Robert S. Sherwin, M.D., FW ’74, C.N.H. Long Professor of Medicine and director of the Yale Center for Clinical Investigation (YCCI). YCCI Scholars are early-career scientists in clinical or translational research who receive salary support as well as mentorship and access to resources in such areas as biostatistics and bioinformatics or study coordination and recruitment. YCCI also houses the



Investigative Medicine Program, which supports physicians seeking a PH.D. to pursue patient-oriented research. The School of Medicine has several other named Scholars slots elsewhere that support early-career scientists.

The time it takes to establish a research career is in part a reflection of a rapidly expanding body of knowledge. "Many of the things I learned in medical school are of little value today," Sherwin said with a smile. "Our knowledge of the biological basis of disease has expanded dramatically and become much more complex than it was when I started."

Although Aronson considers medical school "the broadest biological training you can have," the financial implications of getting dual degrees discourage some young people. The PH.D. route offers a faster track to a job in academia than pursuing two degrees, followed by completing a residency and possibly a fellowship, Aronson explained.

But there are great rewards to be had, said Aronson. He takes pride in the accomplishments of his "scientific grandchildren," the students of his students. And, of course, there are the potential advances in medicine. "My father and most of his family died in their 50s," said Aronson. "Thanks to the discovery of statins, I have had the chance for a longer life than the previous generation."

Aronson's committee came up with a proposal, which they caution is preliminary, to streamline the M.D./PH.D. program and the path to establishing independence as a researcher. The objective is to shorten the time spent in training. Currently, says David A. Hafler, M.D., M.Sc., chair and Gilbert H. Glaser Professor of Neurology, scientists starting out often write their first R01 and establish their laboratories quite late in their careers. Hafler suggested a novel program that combines the M.D./PH.D. and residency into one program. Students would apply for admission to the M.D./PH.D. program in their third year, be interviewed to stay at Yale for their residency, and begin graduate coursework in their fourth and fifth years. The existing option—in which students apply to the program when entering medical school—would still be available. Students on the new track would do a two-year clinical residency and specialty fellowship followed by three more years of intensive research. The proposal saves about three years compared with the more traditional path.

Exposing students to research

Complexity and time pressures keep many physician-scientists off the wards—the place they are most likely to inspire medical students, said Alpern. To be competitive

for NIH grants requires the average academic physician to spend a majority of his or her time on research. Some maintain clinical skills by becoming “very subspecialized,” he said. But most will have little contact with students. “The role model for the students is the clinician,” he said.

Not all four faculty tracks at the medical school lend themselves equally to contact with students. Most physician-scientists enter the Traditional track, a path to tenure in which faculty spend most of their time in research, with some time devoted to teaching. The Clinician-Scholar track was added in the 1980s to allow faculty to spend more time in practice without impeding their advancement. The Investigator track is designed for faculty who spend most of their time in research.

Students are most likely to be supervised in their third and fourth years by Clinician-Educators, a role created in the 1990s as the school sought to expand and develop more areas of excellence within its clinical practice. Yale was more willing to support the medical school’s expansion with Clinician-Educators, who are not eligible for tenure and would not lock the university into the kind of long-term financial commitment associated with employing tenured faculty, Slayman explained. She cautioned, however, against a simplistic understanding of the tracks. Many Clinician-Educators, who have grown in number from 135 in 2001 to 278 today, are not only great clinicians but also boast impressive research achievements. Nevertheless, she said, medical students spend more time on the wards with people who think of themselves primarily as clinicians.

To get more physician-scientists on the wards, some medical schools use a system of co-attendings. Physician-scientists and clinicians form a partnership that offers students a taste of the investigatory approach while a clinically current doctor is involved with every patient, said Aronson. “Many of us do teach medical students,” said Aronson, a role he said he enjoys. But with the decrease in residents’ work hours, the role of the attending has become more critical. “It makes it more difficult to do part time and do efficiently,” he said.

To give students more exposure to physician-scientists, the Department of Pediatrics offers a “Bedside to Bench” elective seminar that pairs students with a physician-scientist mentor. The student and mentor select a pediatric patient as a focus—the student makes a presentation on that patient to the group and reviews what’s known about his or her disease. Then the heart of the students’ work

begins—figuring out the most important unanswered questions about the biological basis of the disease and outlining a program of research that would provide answers.

“We encourage them to think creatively,” said Clifford W. Bogue, M.D., FW ’93, interim chair of pediatrics and one of the seminar directors. The seminar presents “an opportunity to expose them to what it means to be a physician-scientist.” Originally for M.D./PH.D. students only, the seminar is now open to all first-year medical students and typically draws 50 to 60 a year, he said. Part of the attraction may be a taste of clinical contact in the first year. “They’re dying for some sort of clinical relevance,” said Bogue.

The bulk of clinical time typically comes in the latter half of medical school. Clinical practice is “the last thing they are seeing,” said Balkin, the M.D./PH.D. student, who reflected that timing alone could contribute to a choice to pursue clinical practice over investigation.

Balkin is a regular at the Leadership in Biomedicine Lecture Series sponsored by the Office of Student Research. Top investigators talk not only about their research but also about the paths that led them to it. Balkin recalled Richard P. Lifton, M.D., PH.D., chair and Sterling Professor of Genetics, telling about a reviewer who deemed “impossible” a study that Lifton had proposed in 1988 as a resident in Boston. That only made the young investigator absolutely determined to soldier on. The proposal outlined what would become Lifton’s landmark research in hypertension. Balkin said those talks help him see what’s possible and spur him on his path.

“We need to make the students aware of what an exciting lifestyle it is to be a physician-scientist,” said Alpern. “To have the NIH give you a million dollars a year to play in your lab is really fun.”

Being committed to the career path is half the battle, according to Schafer. He throws in a trick question when interviewing potential fellows, asking them what they’d do if they absolutely could not get funding for their research. About 90 percent reply that they’d devote themselves to clinical practice. A select few say the idea of not combining medicine with basic science is “inconceivable.” Those applicants get the job.

Balkin feels much the same. “The problems are the problems,” he said. “But if you want to do research, you will find a way to make it work.” **YM**

Colleen Shaddox is a writer in Hamden, Conn.

“You’re teaching people how to bloody well think—not to memorize facts!”

James Jamieson, M.D., PH.D.,
professor of cell biology, director of the
M.D./PH.D. program, and a member
of Aronson’s committee



Faculty

Thomas Steitz

Nobel laureate named to Royal Society

THOMAS STEITZ, PH.D., Sterling Professor of Molecular Biophysics and Biochemistry, and a winner of the Nobel Prize for Chemistry in 2009, was one of 52 scientists named in May as fellows or foreign members of the Royal Society, the United Kingdom's national academy of science. Steitz, a Howard Hughes Medical Institute investigator, was one of eight foreign scientists to be honored by the society, which has counted Isaac Newton and Charles Darwin among its members. Steitz was selected "for his pioneering contributions to the mechanisms involved in the processes of gene replication, transcription, control, and translation that are fundamental to all life."

Steitz, colleague Peter Moore, PH.D., Sterling Professor of Chemistry and professor of molecular biophysics and biochemistry, and others at Yale were instrumental in discovering the structure of the ribosome, the cell's protein-making factory necessary for life. The work has led to creation of a new generation of antibiotics now in clinical trials. Scientists in England and Israel shared in the Nobel Prize for their research on the ribosome.

Founded in 1660, the Royal Society has three roles: as a provider of independent scientific advice, as a learned society and as a funding agency. Its membership includes renowned scientists from the United Kingdom and beyond.



Alanna Schepartz



Scott Miller

NOTES

Michael Higley



David Spiegel



Sidney Blatt



Hilary Blumberg

Grant awarded for study of artificial enzymes

Two Yale researchers, **ALANNA SCHEPARTZ, PH.D.**, the Milton Harris '29 PH.D. Professor of Chemistry and professor of molecular, cellular and developmental biology, and **SCOTT J. MILLER, PH.D.**, department chair and the Irénée du Pont Professor of Chemistry, have received a \$1 million grant from the W.M. Keck Foundation to support a three-year study to create artificial enzymes using beta-peptide bundles. These miniature synthetic proteins were discovered in the Schepartz laboratory in 2007. The enzyme project has far-reaching implications in the field of synthetic chemistry as well as in biomimetics and synthetic biology.

The construction of an artificial enzyme has long been considered a "Holy Grail" of modern chemistry. Natural enzymes are known to accelerate chemical reactions dramatically. If this behavior can be mimicked to drive desirable reactions in research or industry, scientists will have unprecedented control over the creation of new and useful materials. Some researchers believe that artificial enzymes could be used to target specific cellular functions or applications and could work with greater efficiency than their natural counterparts.

Schepartz and Miller are focusing on beta-peptide bundles in part because of their novelty; these tiny protein-like structures offer unique advantages for catalyst development. In addition, beta-peptide bundles are stable, relatively predictable in their behavior, and well suited to systematic study in the laboratory.

Four Yale scientists, including two in biomedical sciences, were among 118 named in February as 2011 Sloan Research Fellows by the Alfred P. Sloan Foundation. The two-year fellowships are awarded annually to researchers in science, mathematics, computer science, and economics from the United States and Canada, and include \$50,000 in research funding. The Fellows in the biomedical sciences are:

Michael J. Higley, M.D., PH.D., assistant professor of neurobiology, and **David A. Spiegel, M.D. '04, PH.D. '04**, assistant professor of chemistry. Higley's lab seeks to understand how synaptic connections among brain cells support the processing, storage, and retrieval of information in healthy individuals and how these connections are disrupted during the cognitive decline associated with neuropsychiatric disease. Spiegel's lab develops novel chemical strategies for modifying the human immune system that can be used to treat such diseases as cancer, HIV infection, and diabetes.

Sidney J. Blatt, PH.D., professor of psychiatry and of psychology, announced his retirement effective June 30. Blatt has been the longstanding chief of the Section of Psychology in Psychiatry; under his leadership, the predoctoral training programs in psychology at the Connecticut Mental Health Center

and Yale-New Haven Hospital ranked among the top programs in the country. Since his arrival at Yale in 1960, Blatt distinguished himself with his rigorous approaches to the study of the psychoanalytic dimensions of psychological processes, particularly depression and its treatment. He has received numerous honors, including the Sigmund Freud Professorship at Hebrew University of Jerusalem; the Mary S. Sigourney Award of the Sigourney Trust; seven visiting professorships; and distinguished research awards from two divisions of the American Psychological Association.

Hilary P. Blumberg, M.D., associate professor of psychiatry and director of the Mood Disorders Research Program at Yale, was awarded a \$3.7 million grant from the National Institute of Mental Health in March to expand her research on bipolar disorder. Blumberg's lab will use brain imaging and genetic tests to study bipolar disorder in adolescents and adults. Researchers plan to track changes in brain circuitry as the disorder progresses from adolescence to adulthood and to identify genes related to this progression. The goals of the research are to find new ways to intervene early in the disease process and to develop new therapies based on the age and genetic profiles of individual patients.

Marie E. Egan, M.D., associate professor of pediatrics (respiratory), has received a 2010 Hartwell Individual Biomedical Research Award for research on cystic fibrosis. The award provides research support for three years at \$100,000 direct cost per year, as well as



Marie Egan

Jorge Galán

Jo Handelsman

Rajita Sinha

William
Tamborlane

Mary Tinetti

videoconferencing equipment to enable periodic communications with the Hartwell Foundation. Located in Memphis, Tenn., the foundation funds innovative biomedical applied research with potential benefits for children.

Jorge E. Galán, D.V.M., PH.D., the Lucille P. Markey Professor of Microbial Pathogenesis, professor of cell biology and chair of the Section of Microbial Pathogenesis, received in February the 2011 Robert Koch Award, one of the most prestigious honors in the field of microbiology. Galán was honored for his work in describing how such foodborne pathogens as *Salmonella* and *Campylobacter* cause so much damage. The award, given by the Robert Koch Foundation in Berlin, Germany, carries a prize of 100,000 euros and honors the work of the German physician who sought a cure for tuberculosis in the 1880s.

Jo Handelsman, PH.D., was named the Frederick Phineas Rose Professor of Molecular, Cellular and Developmental Biology this spring. Handelsman, who is also a Howard Hughes Medical Institute investigator, is noted for her research on diversity in microbial communities and their role in infectious disease, as well as for her efforts to improve science education and increase the

participation of women and minorities in science at the university level. Her term as Frederick Phineas Rose Professor runs through June 30, 2015. In January she was one of 11 individuals selected by President Barack Obama to receive the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring. Handelsman co-founded the Women in Science & Engineering Leadership Institute at the University of Wisconsin-Madison, was appointed the first president of the Rosalind Franklin Society, and served on the National Academies' panel that wrote the 2007 report *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering*.

Abeel A. Mangi, M.D., was appointed surgical director in March of the Center for Advanced Heart Failure, Mechanical Circulatory Support and Heart Transplantation at Yale-New Haven Hospital. Mangi is an associate professor of surgery at the School of Medicine. He specializes in complex and re-operative cardiac surgery; heart, heart-lung and lung transplantation; ventricular assist devices; total artificial hearts; extracorporeal membrane oxygenation; operations for heart failure and aortic or mitral valve repair and replacement; off-pump coronary bypass grafting; septal myectomy; surgical treatment of left ventricular outflow tract obstruction; treatment of chronic pulmonary emboli; and ascending aorta and aortic arch replacement.

Jennifer Prah Ruger, PH.D., associate professor of health policy at the School of Public Health, is a recipient of a

2011 Guggenheim Fellowship. The award will support the completion of her forthcoming book, *Global Health Justice and Governance*, to be published by Oxford University Press. Ruger specializes in global and domestic public health and health policy, with a focus on the intersections of ethics, economics, and politics in health and health care.

Rajita Sinha, PH.D., professor of psychiatry, succeeded Sidney Blatt as chief of the Section of Psychology in July. Sinha is internationally known for her work on the psychobiology of stress and its effects on addictive behaviors. She directs two large NIH-supported research centers, the Office of Research on Women's Health and the National Institute on Drug Abuse Specialized Center of Research on sex/gender issues and addiction, as well as the Yale Stress Center. In her capacity as chief, Sinha will work with the psychology faculty to build on the strengths of the psychology section with regard to professional development, clinical care, research, and education.

William V. Tamborlane, M.D., FW '77, professor of pediatrics (endocrinology), received the T2-Translation Award by the Society for Clinical and Translational Science. This award recognizes the

translation of research from early clinical use to applicability in clinical practice. The award was bestowed on April 28 at the national joint meeting of the Association for Clinical Research Training/Society for Clinical and Translational Science/American Federation for Medical Research meeting in association with the Association for Patient-Oriented Research. Tamborlane was recognized for his work, which has provided new delivery methods for the physiologic replacement of insulin while preventing many of the catastrophic long-term complications of childhood diabetes.

Mary E. Tinetti, M.D., director of the Yale Program on Aging and the Gladys Phillips Crofoot Professor of Medicine (Geriatrics), professor of epidemiology (chronic diseases), and of investigative medicine, in the Section of Geriatrics, has been awarded the Edward Henderson Award from the American Geriatrics Society. Tinetti was the first investigator to show that older adults at risk for falling and injury can be identified; that falls and injuries are associated with a range of serious adverse outcomes; and that multifaceted risk-reduction strategies are both effective and cost-effective. Tinetti was also the 2010 recipient of the Maxwell A. Pollack Award for Productive Aging from the Gerontological Society of America.

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On selfishness in the service of others

"You have to own your good works," speaker tells Class of 2011 during May Commencement ceremonies.

Mother Nature provided the rain, but the proud teachers, family members, and friends supplied the lightning—in the form of camera flashes—during Commencement ceremonies on May 23.

The bicentennial class of 81 graduates marched down Cedar Street to Amistad Park as the cheers of loved

ones and the skirl of bagpipes led them to the shelter of a tent that they entered as students and left as doctors.

In his Commencement address, Frank J. Bia, M.D., M.P.H., FW '79, professor emeritus of medicine and medical director since 2008 of the disaster relief organization AmeriCares, discussed the virtue of selfishness in medical service. "You cannot share what you don't even have yourself," he said to the Class of 2011, the last group of students he taught in the classroom and at the bedside.

The altruistic model of medicine as a social contract that subsumes a doctor's needs to those of her patients is flawed and irrational, Bia said. In his 40 years as a doctor, Bia learned that good work and service come from a selfish place—a place where "selfishness becomes a virtue when your own happiness is tied to service. What matters is that you own your own motives completely," said Bia. "If good works are done solely at the request, or even the mandate, of others, you will not be happy—not as happy as you deserve to be."

In 1982, Bia and his wife, Margaret J. Bia, M.D., FW '78, professor of medicine, spent some time at Hôpital Albert Schweitzer Haiti shortly after both of his parents had passed away. When he spoke of his experiences at grand rounds on his return, he grew increasingly frustrated by colleagues who remarked that he had done such good and selfless work in Haiti.

"I needed Haiti a helluva lot more than Haiti needed me," said Bia. "I found myself making a difference—one patient at a time—and that made me happy." The concentrated clinical work in the Haitian countryside, Bia said, both healed his grief and renewed his understanding of medicine's social contract.

"You deserve to be the beneficiary of your own moral actions," Bia concluded.

The graduating class wrote an oath for Yale physicians that echoed Bia's sentiment. "I know that I cannot effectively care for patients without

also caring for myself," the students read. Following Yale tradition, the oath is based on the Hippocratic Oath and other classical statements.

Bia's remarks were preceded by the presentation of a class gift to the American Red Cross for disaster relief efforts in the southern United States and in Japan.

The Bohmfalk Prizes for outstanding teaching went to John Fenn, M.D., clinical professor of surgery (vascular), in the clinical sciences, and to Peter Marks, PH.D., M.D., associate professor of medicine (hematology), in the basic sciences.

The Leonard Tow Humanism in Medicine Award was bestowed on W. Scott Long, M.D., associate clinical professor of medicine.

The Leah M. Lowenstein Award, presented by the Office for Women in Medicine to a member or members of the faculty who represent the highest degree of excellence in the promotion of humane and egalitarian medical education, went to Marcella Nunez-Smith, M.D., M.H.S., assistant professor of medicine.

The Francis Gilman Blake Award was given to Andrea G. Asnes, M.D., assistant professor of pediatrics.

The Betsy Winters House Staff Award went to Anup Patel, M.D. '09.

The Alvan R. Feinstein Award was given to Richard J. Gusberg, M.D., professor of surgery (vascular) and of diagnostic radiology.

—Stephanie Soucheray



JOHN CURTIS (2)



TOP Frank Bia, medical director of AmeriCares and a former member of the Yale faculty, delivered the Commencement address this year.

ABOVE Students Lionel McIntosh and Westin Amberge waited at Cross Campus for the graduation procession to begin.



TERRY DEGRADIS (3)

"One of our own" returns to Yale as Farr lecturer on Student Research Day

George Lister, M.D. '73, HS '75, spent more than 20 years on the Yale faculty as a professor of pediatrics and anesthesiology and founder and chief of the Section of Critical Care and Applied Physiology (now the Section of Critical Care Medicine). He left Yale in 2003 for the University of Texas Southwestern Medical School, where he holds the Robert L. Moore Chair and is the chair of Pediatrics and pediatrician-in-chief at Children's Medical Center of Dallas.

Lister returned to Yale on May 9 to deliver the 24th annual Farr Lecture on Student Research Day. His talk was titled "Sowing Seeds for a Career in Medicine: Reflections, Projections."

"We bring back one of our own," said Dean Robert J. Alpern, M.D., Ensign Professor of Medicine, in his introduction of Lister. Alpern had lured Lister away from Yale when he was dean of the medical school in Dallas.

In his talk, Lister recalled the things of value he had found at Yale as a medical student. "I found faculty who were accessible and invested in students," he said. "I found faculty who valued curious and industrious learners. I found faculty who were helping students focus on figuring things out. And I was amazed by the talents of my classmates."

After describing his part in a national effort to determine the causes of sudden infant death syndrome and find a way to prevent it, Lister concluded by offering some of the lessons he had "learned along the way—regrettably, some more than once."

"Surround yourself with people who are smarter than you are, then look over your shoulder."

"What afflicts the patient and what challenges the physician create an excitement for the doctor-patient relationship. That intersection creates a bond for the doctor-patient relationship."

"The opportunity to learn from the patient ... is really the beginning of being a physician. ... Every patient interaction presents an opportunity to learn."

"Take mastery of your education. No one else will. Instead of asking residents or attendings what to do, consider a problem; propose an approach or rationale; request affirmation."

"Do not ignore an observation just because it disagrees with the explanation. What does not fit often provides a novel insight into a patient's problem."

"In medicine, not doing something erroneous is a lot smarter than doing something clever."

"Don't promise the patient or family what you can't deliver. The only things you can promise are your presence and attention."

Sixty-four students, including nine in the M.D./PH.D. program, presented posters at the event in The Anlyan Center. Six students—Isaac Benowitz, Noah Capurso, Tyler Durazzo, Jamie Harrington, Alexandra Miller, and Keri Oxley—made oral presentations.

—John Curtis



TOP Faculty posed with the five oral presenters at this year's Student Research Day. Front row: keynote speaker George Lister, Alexandra Miller, Isaac Benowitz, and Jamie Harrington; back row, John Forrest, director of student research, Tyler Durazzo, Keri Oxley, Noah Capurso, and Dean Robert Alpern.

MIDDLE Anna Engberg discussed her research, on a novel dendritic cell therapy for solid tumors, with medical students Leonard Edokpolo and Oge Eze.

ABOVE Eyiymisi Damisah studied the neurochemistry of spontaneous recurrent seizures.

Alumnus brings social perspective to post

New York State's new health commissioner will apply lessons learned in public health.

When Nirav R. Shah, M.D. '98, M.P.H. '98, HS '01, was a medical student, he found a research paper that proved to be such a useful study tool that he left a photocopy at the library's front desk with a note urging his classmates to use the paper.

Yale's teaching philosophy, with its emphasis on collaboration rather than competition, "was extremely useful for learning," said Shah, who is now applying the same principles to his new job as New York State Commissioner of Health. "It's fundamental in public service," he said. "You all have a common goal, and you have to figure out how to advance your shared agenda, so working together as a group is key."

Shah, the youngest person as well as the first Indian-American to be named to the post, became commissioner in January 2011. Before that, he had been an attending physician at Bellevue Hospital Center in Manhattan, associate investigator at the Geisinger Center for Health Research in central Pennsylvania, and assistant professor at the New York University School of Medicine in Manhattan.

Shah's medical career got off to an inauspicious start during his first week at Yale when he met Ralph I. Horwitz, M.D., FW '77, chair of the Department of Internal Medicine, with whom he hoped to collaborate on research related to work he had done as a Harvard undergrad.



Shah was so nervous that he spilled Horwitz's coffee on his desk.

Despite that ill-fated introduction, Shah and Horwitz had "a phenomenal working relationship"—one that presaged Shah's interest in public health and led to his staying at Yale for his residency in internal medicine. Shah's research, which explored better methods for answering clinical questions as well as the comparative merits of randomized controlled trials and observational studies, was published in *The New England Journal of Medicine* in June 2000. "Everyone thought observational studies are fatally flawed, but we showed that in fact you can get great answers," Shah said.

Shah's interest in bringing a population health perspective to interactions with patients took root while he was at Yale. He offered this example: "You know that tobacco is the number-one killer—but your patient who is a smoker has three or four complaints he wants you to address, and tobacco probably isn't one of them. What do you do?"

Shah is grateful that Yale allowed him to spend his fourth year earning a public health degree. "Gaining a population and public health perspective helped flavor the type of doctor I became and the kind of questions I ask."

Shah's other area of interest is caring for the medically underserved—a

highly germane field of expertise in a state where nearly one in every five residents receives Medicaid assistance. "At Bellevue it was the urban immigrant poor," he said. "At Geisinger, where I spent nearly half my time, it was rural underserved elderly patients."

Those experiences helped prepare Shah for the challenges he faces in his new job. As New York's top health official, his mission is to rein in a Medicaid bill that amounts to one-third of the state budget, or about \$1 billion a week. "We're taking an all-hands-on-deck approach," he said. "It's going to be a transparent process that engages all aspects of the health care system."

Shah again credits his Yale education with giving him the tools he needs. While at Yale, he organized a conference against gun violence. "We had community, clergy, police, gang members, and affected family members all around a table together," he said. While the conference was a success, Shah's subsequent plan, a gun turn-in program, failed for administrative reasons. "Understanding the various stakeholders' perspectives and all of the lessons I learned through that experience factor into what I need to know as a state health professional," he said.

Shah, his wife, Nidhi, and their two young children recently moved from Manhattan to Albany for his job. "One

Nirav Shah became the health commissioner for the state of New York in January. His wife, Nidhi, attended the ceremony with their two children.

reason I was able to do this is because of the phenomenal support I've received. My wife changed her life in support of this shared vision."

Only two months into his new job, he and Governor Andrew Cuomo began to tackle Medicaid. Cuomo got the hospitals and unions—two historic adversaries—to agree to work together for improved health care at a reduced cost. Meanwhile, Shah traveled the state listening to people and gathering more than 4,000 ideas on how to achieve this goal. "We heard from a woman who asked why she left the hospital in an ambulance, which cost \$400, rather than a taxi, which would have cost less than \$40," Shah said.

The list of suggestions was boiled down to 79 and submitted to the legislature for approval. This reform agenda was approved by the legislature in the spring, and Shah said that, if enacted, the suggestions could reduce the state's Medicaid budget by \$2.3 billion in the first year alone.

Shah knows the goal is ambitious, especially for somebody who is still learning the bureaucratic intricacies of Albany, but he said he's ready for the challenge. "What can I say? I'm an optimist."

—Jennifer Kaylin

In retirement, a urologist finds a new career bringing health care to rural Kenya

Three years ago, Ralph F. Stroup, M.D., HS '73, a retired urologist, stepped out of his comfort zone and into the village of Chumvi, Kenya, home to nomadic Maasai pastoralists. Accustomed to providing state-of-the-art medical care, Stroup was struck by the reality of the primitive health care conditions he encountered. Here in Kenya's Central Highlands, women were giving birth in huts without running water or electricity while herds of cattle and goats roamed outside. The situation tugged at Stroup's heartstrings. The result is Kenyan Health Care Initiatives (KHCI), a humanitarian effort affiliated with the nonprofit organization International Consultants and Associates. Stroup has been raising funds to improve health care in two rural towns in this East African country.

Stroup did not foresee during his first visit to Kenya in 2008 that he would soon be deeply involved in creating educational programs, raising awareness, and soliciting funds to support basic health care infrastructure and clean water acquisition in the Central Highlands of Kenya. At the time, Stroup had traveled to Nanyuki, Kenya—a town of about 31,000 three and a half hours north of Nairobi—to help facilitate a workshop for health care workers on techniques for community mobilization against HIV/AIDS. Then came an invitation from his hosts to visit the Laikipia District north of Mount Kenya, home to thousands of Maasai who follow the water as they graze their cattle and goats.

Water has been increasingly hard to obtain due to several years of severe drought, and the Maasai are just beginning to recover from the loss of nearly 70 percent of their herds—their main source of income and food.

During Stroup's first visit to the Laikipia District, he traveled more than two bone-jarring hours by safari van along cattle paths to reach Chumvi, where a small health care clinic provides primary care to 8,000 people. The clinic, staffed by a full-time nurse, faced closure due to lack of funding, and Stroup promised to find funds in the United States. "I am a firm believer in finding ways to connect people with people, and resources with people, so that we can greatly enhance the accessibility of good-level primary health care in these remote areas," said Stroup. Stroup came through, and he now provides about \$5,000 of support to the clinic each year through KHCI.

The Chumvi clinic opened a new two-bed maternity unit in July. Stroup's efforts also support another clinic in nearby Lokusero that serves about 9,000 Maasai. The clinic was an unfinished shell when Stroup first visited in August 2008; however, his initiative has raised money for construction, including two outhouses and nurses' quarters, as well as the purchase of furniture and medical equipment.

Stroup works on a shoestring budget and does all of his own fundraising. He spreads the word about his efforts to church groups, local medical societies, and Rotary Clubs in southern Connecticut. Although all the donations are relatively small, Stroup brings in about \$15,000 to \$20,000

Ralph Stroup, a retired urologist, has launched a program to bring medical care to rural Kenya.



JOHN CURTIS

per year for the projects in Nanyuki and Lokusero. Stroup's motivation is simple: "Immersion experiences like this have been life-changing for me. I now have a group of friends who have irrevocably changed who I am as a person," he said.

For a man who is retired, Stroup finds plenty to keep him busy aside from helping out his Maasai friends. Although Stroup spent his career in a private urology practice with four other physicians in New Haven, he has always had a clinical faculty appointment at Yale. Stroup is an assistant clinical professor in surgery (urology) at the School of Medicine and works part time as the attending in charge of the urology residents' clinic. Stroup also makes time for more leisurely pursuits, including gardening, travel, photography, and volunteer work. He also enjoys visiting his grandchildren with his wife, Mary Ann, who served as the charge nurse when an ambulatory surgery center first opened at Yale-New Haven Hospital in the 1980s, and who now works part time as a school nurse.

Stroup said the most agonizing issue troubling the people of Lokusero is a lack of running water, even though the government installed a well in 2009. The well pump runs on diesel fuel, which the community can't afford. At the top of Stroup's priority list is obtaining funds for a solar-powered well pump. He has raised half the \$20,000 for the pump and is determined to raise the rest of the money by the end of the year. "The Maasai of Laikipia District have experienced great hardship during the past two years," he said, "and clearly their needs for the basics of life—clean water, adequate food, access to health care, and health care education—are an ongoing issue."

—Kara A. Nyberg

Familiar Faces

Do you have a colleague who is making a difference in medicine or has followed an unusual path since leaving Yale? We'd like to hear about alumni of the School of Medicine; Physician Associate Program; and the medical school's doctoral, fellowship, and residency programs. Drop us a line at ymm@yale.edu or write to Faces, Yale Medicine, 1 Church Street, Suite 300, New Haven, CT 06510.



Herbert and Grace Boyer with Dean Robert Alpern.

Pioneer in genetic engineering and biotech wins Parker Medal

In the early 1960s, a doctoral student at the University of Pittsburgh wrote to Edward A. Adelberg, PH.D. '49, chair of the Department of Microbiology at the Yale School of Medicine, to ask for bacterial strains needed for a research project. The strains were in the mail within a week, and a scientific collaboration and friendship had begun.

The student, HERBERT W. BOYER, PH.D., FW '66, came to Yale in 1963 as a postdoc in Adelberg's lab. "The whole concept and the fruit of my career," said Boyer at a ceremony in the Historical Library in April, "date back to Ed Adelberg and my association with him."

Boyer was back at Yale to receive the Peter Parker Medal, awarded to him and his wife, Grace, for outstanding contributions to the School of Medicine. The award came on the 20th anniversary of the dedication of the Boyer Center for Molecular Medicine, built thanks to a gift from the Boyers in 1990. "We thought the building of the Boyer Center was so critical that it really marked the time to give the Peter Parker Medal," said Dean Robert J. Alpern, M.D., Ensign Professor of Medicine.

After completing his postdoc at Yale, Boyer went to the University of California, San Francisco, where he began working with Stanley Cohen, PH.D., a professor at Stanford. The two found a way to use recombinant DNA to produce proteins with potential medical applications, including insulin and human growth hormone. This technology opened the door to the biotech industry. Boyer formed Genentech in partnership with venture capitalist Robert A. Swanson in 1976.



Eliot Sorel

Cynthia
Booth Lord

Alex Madlener

Farzad
Mostashari

Alpern noted that Boyer founded the company at a time when alliances with business were frowned upon in academia. Now, Alpern said, such relationships are common practice. And Boyer was also ahead of his time in his embrace of interdisciplinary science, Alpern said, and that set the path to the Boyer Center, which is a “collection of faculty members from many different departments, all working together on many different problems.”

Carolyn W. Slayman, PH.D., deputy dean for academic and scientific affairs, described Boyer's days as a postdoc at Yale. “Herb was a ringleader among the postdocs in organizing activities for the graduate students and making science exciting for everybody,” she said.

Boyer paid tribute in his brief remarks to Adelberg, a professor emeritus of human genetics who died in 2009. “Not only was he a fine scientist, but he was a gentleman of the first order,” Boyer said.

1950s

William M. Gould, M.D. '58, has announced the publication of his second novel, *Three Boys Like You*, which is the story of a complicated boyhood friendship and how it changed over more than 30 years. Gould, who lives in northern California, is a practicing physician, jazz musician, and writer. His first novel, *A Little Score to Settle*, a tale of suspense about a man's search for his father, was published in 2008.

1970s

Felix Freshwater, M.D. '72, HS '74, published a humorous look at medical jargon in the April 2011 issue of the *Journal of Plastic, Reconstructive & Aesthetic Surgery*. In the article, Freshwater proposed an alternative to both the *Oxford English Dictionary* and the *Dictionary of American Regional English*, to be called the *Yale American Plastic Surgery* dictionary, or YAPS. Entries include DIEP, “acronym for a type of patient to be avoided—demanding individual expecting perfection,” and “fillerologist”—specialist in injecting fillers.” Freshwater lives in Miami, where he treats diseases of the hand and performs reconstructive plastic surgery.

Eliot Sorel, M.D., FW '75, led work groups in developing two policies that were adopted by the American Psychiatric Association's (APA) Assembly and its board of trustees last year. Those policies were titled *Conflicts of Interest: Principles & Guidelines*, and *Psychiatry & Primary Care Integration*. Sorel directs and teaches courses in the School of Public Health and Health Services at the George Washington University, where he

has professorial appointments in global health, health services management and leadership, and psychiatry and behavioral sciences in the School of Medicine and Health Sciences.

1990s

Cynthia Booth Lord, PA-C '91, clinical associate professor and director of the physician assistant program at the School of Health Sciences at Quinnipiac University, was appointed to the Primary Care Coalition of Connecticut in March. The coalition comprises Connecticut health care professionals, including physicians, nurse practitioners, physician assistants, and public health workers, as well as community health centers, government health programs, and private medical practices, and works to build and promote a more effective system of primary health care in the state. Lord is a former president of the American Academy of Physician Assistants.

Alex Madlener, M.D. '95, HS '99, has created a firm in North Haven, Conn., to help physicians manage their finances. His firm, Open Circle Wealth Partners, offers comprehensive and individualized wealth management services. Madlener worked at Paine Webber, Charles Schwab, and CIGNA Individual Financial Services before entering medical school.

Farzad Mostashari, M.D. '96, was named National Coordinator for Health Information Technology at the U.S. Department of Health and Human Services in April. Mostashari joined the office of the National Coordinator in July 2009. Previously, he served in the New York City Department of Health

and Mental Hygiene as assistant commissioner for the Primary Care Information Project. Mostashari also led the NYC Center of Excellence in Public Health Informatics, funded by the CDC, and a project funded by the Agency for Healthcare Research and Quality that focused on quality measurement at the point of care. Mostashari also established the Bureau of Epidemiology Services at the NYC Department of Health. He was one of the lead investigators in the outbreaks of West Nile virus and anthrax in New York City and among the first developers of real-time electronic disease surveillance systems nationwide.

2000s

Alfred I. Lee, M.D. '04, PH.D. '04, was named an assistant professor of hematology at Yale Cancer Center in March. Lee will continue his research efforts at Yale on clinical lymphoma and critical care hematology and will be actively involved in medical education. Lee was previously an instructor in medicine at Harvard Medical School, where he was the recipient of several teaching awards. A graduate of Stanford University, Lee completed his residency training at Brigham and Women's Hospital in Boston, where he served as chief medical resident, followed by a fellowship in hematology/oncology at Dana-Farber Cancer Institute.

SEND ALUMNI NEWS TO

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In memoriam

Madeline S. Crivello, M.D. '77, died on February 19, in Naples, Fla., after a lengthy fight with cancer. She was 58. After a residency and fellowships in diagnostic radiology, Crivello spent several years in private practice at Framingham Hospital in Massachusetts, followed by many years in practice as director of women's imaging and active involvement in the radiology residency program at Mount Auburn Hospital in Cambridge, Mass. She was diagnosed in her 40s with aggressive breast cancer and underwent extensive therapy at Dana-Farber Cancer Institute. She went on to develop one of the first women's imaging centers in New England, where she found great fulfillment as a leading advocate for women's health in the Boston area. Although a lifelong non-smoker, she was diagnosed with primary lung cancer in 2008.

William H. Prusoff, Ph.D., a member of the School of Medicine faculty for 57 years, died on April 3. He was 90 and lived in Branford, Conn. Prusoff was born in 1920 in Brooklyn, N.Y., the son of a grocer. In the late 1930s the family moved to Miami, where Prusoff majored in chemistry at the University of Miami. His poor eyesight kept him out of the Armed Forces during World War II, but he spent the war as a munitions inspector in Memphis and a water-quality tester for troops stationed in Miami.

After the war and unsuccessful attempts to enter medical school (including Yale), he obtained a Ph.D. in chemistry at Columbia University and then joined Arnold Welch, Ph.D., at Western Reserve University (now Case Western Reserve). When Welch came to Yale to head the pharmacology department in 1953, Prusoff came with him. Prusoff soon synthesized 5-iododeoxyuridine, one of the first nucleoside analogues, which was shown to have antiviral activity. The first clinically useful antiviral drug, it found widespread use as a preventive of herpes

virus keratitis in infants. Prior to the synthesis of this compound, researchers had thought the development of effective nontoxic antiviral agents was impossible. Prusoff has been called the father of antiviral chemotherapy for this seminal work.

But his major contribution was still to come. As the AIDS epidemic was raging in the 1980s, Prusoff and his late Yale colleague Tai-Shun Lin, Ph.D., showed that an unsuccessful cancer compound known as stavudine or d4T was active against human immunodeficiency virus (HIV). After securing the patent for d4T, Yale licensed it to Bristol-Myers Squibb, which sold it under the trade name Zerit in 1994. Zerit soon became a component of the first combination drug therapy for HIV.

The William H. Prusoff Foundation supported numerous programs under his direction, including the Yale Initiative for the Interdisciplinary Study of Anti-Semitism. Prusoff also endowed lectureships in virology and pharmacology at Yale, funded scientific prizes, and supported the research of individuals and laboratories at Yale. When Doctors Without Borders and Yale students called on the university and Bristol-Myers Squibb to make Zerit available at low cost in impoverished areas of the world, Prusoff actively joined in the campaign. The company acceded in March 2001.

David Seligson, M.D., Sc.D., professor emeritus of laboratory medicine, died at home in Branford, Conn., on March 3. He was 94. Born in Philadelphia, Seligson was the founding chair and chief of the Department of Laboratory Medicine at the School of Medicine and at Yale-New Haven Hospital. The discipline of clinical chemistry and the broader field of laboratory medicine as they are practiced today are the results of his vision and creativity. Recruited from the University of Pennsylvania to Yale and Grace-New Haven Hospital as the first director of the hospital's clinical

laboratories in 1958, Seligson established the infrastructure of the Department of Laboratory Medicine, creating divisions of clinical chemistry, microbiology, transfusion medicine (blood banking), and hematology.

Recognizing the growing need for clinical laboratory data in the modern practice of medicine, Seligson pioneered the use of automation. One of the first applications of a digital computer in the clinical laboratory was made in Seligson's department at Yale, and shortly thereafter data were transmitted directly from the laboratory computer to data stations on the patient wards. Seligson was also among the first to highlight the clinical importance of test specificity and accuracy, as compared to simple reproducibility. He retired in 1988.

We have also received word of the passing of the following alumni:

J. Alfred Berend, M.D. '56, died on January 18 of heart failure in San Diego, Calif. He was 79. Berend had been an internist at the Scripps Clinic in La Jolla, Calif., for 31 years.

Colin M. Bloor, M.D. '60, HS '62, FW '64, distinguished professor emeritus of pathology at UC San Diego School of Medicine, died on September 9, 2010, in San Diego Hospice from complications of a stroke. He was 77.

Benjamin Bursten, M.D. '58, HS '62, died on December 4 in Oak Ridge, Tenn. A specialist in forensic psychiatry, he was 83.

Linus W. Cave, M.D. '46, died on September 4, 2010, in Dover, N.J. He was 87.

Robert Evans, M.D., a clinical professor and psychoanalyst at the Child Study Center, died on May 13, 2010, in North Branford, Conn. He was 95.

Michael A. Gilchrist, M.D., HS '69, died on October 31, 2010, in Chelmsford, Mass. A pediatrician, he was 66.

Barbara (Wilmer) Gibson, M.D. '55, died on January 17 in Burlington, Vt. She was 80.

Val S. Greenfield, M.D. '56, a retired ophthalmologist, died on March 16 in Voorhees, N.J. He was 78.

Marshall R. Holley, M.D., HS '69, former associate clinical professor of obstetrics/gynecology at Yale, died of cancer in New Haven on December 5. He was 75.

Harold March, M.D. '50, died on January 23. He was 92.

Elmer T. Mitchell Jr., M.D. '56, a specialist in plastic surgery, died on December 27 in Port St. Lucie, Fla. He was 80.

Adrian M. Ostfeld, M.D., former chair and longtime faculty member in the Department of Epidemiology and Public Health, died on January 28 in Hamden, Conn. He was 84.

Joel M. Rappeport, M.D., professor of medicine (hematology) and pediatrics at Yale and a pioneer in the treatment of patients with bone marrow failure, died on January 16 at his home in Woodbridge, Conn. He was 71.

Sara S. Sparrow, Ph.D., professor emerita of psychology and chief psychologist in the Child Study Center from 1977 to 2002, died in New Haven on June 10, 2010. She was 77.

Carter Stilson, M.D. '42, HS '46, died on January 7 in New Haven. He was 94.

Walter P. Sy, M.D., HS '56, an anesthesiologist, died on February 17 in Westmoreland, N.H. He was 74.

Irving N. Wolfson, M.D. '43, a retired cardiologist, died at his home in Worcester, Mass., on July 8, 2010. He was 90.

SEND OBITUARY NOTICES TO
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Many of the speakers at the Bicentennial Symposium joined President Richard Levin, Dean Robert Alpern, and other medical school faculty for a dinner on April 28. Front row, from left: Levin, Charles Sawyers, Joseph Goldstein, David Baltimore, Eric Kandel, Elizabeth Blackburn, Elaine Fuchs, Robert Lefkowitz, and Alpern. Back row, from left: Peter Kim, Phillip Sharp, Harold Varmus, Michael Brown, and Michael Marmot. Speakers Robert Califf, Susan Lindquist, and Huda Zoghbi were unable to attend the dinner.



MICHAEL MARSLAND

Biomedicine in the New Century

In the signature event held on April 28 and 29 to celebrate the School of Medicine's 200th year, 15 world-renowned scientists, clinicians, and scholars—including seven Nobel laureates—gathered to give lectures on "Biomedicine in the New Century."

"This bicentennial symposium is really the most important event of our celebration," Dean Robert J. Alpern, M.D., Ensign Professor of Medicine,

told the audience in the Mary S. Harkness Auditorium. "We now find ourselves in a great era of advances in biomedical research. When we got together to decide how to celebrate our anniversary, there was uniform agreement that it had to be done with a scientific symposium, bringing in scientists of the highest regard. I think you are in for a real treat."

—John Curtis

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Winter 2012



A 21st-century NGO

A handful of Yale medical students opened a clinic and hospital in a remote corner of Nepal. From 8,000 miles away, via the Internet, they provide support. Here's how they do it.

18

ON THE COVER Nyaya Health has brought health care to a remote corner of western Nepal. The program has hired community health workers like Kamala Koli, who conducts screening for malnutrition in her village, Mastamandu, in the area surrounding Nyaya's Bayalpata Hospital.

THIS PAGE Taraman Kunwar, a health assistant (mid-level practitioner) for Nyaya Health, sees patients in the Bayalpata Hospital outpatient department.

Photos by Roshani Andrews



WINTER 2012

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12 Doctors who write

School of Medicine alumni who are writers discuss how writing helps them reaffirm their belief in medicine.

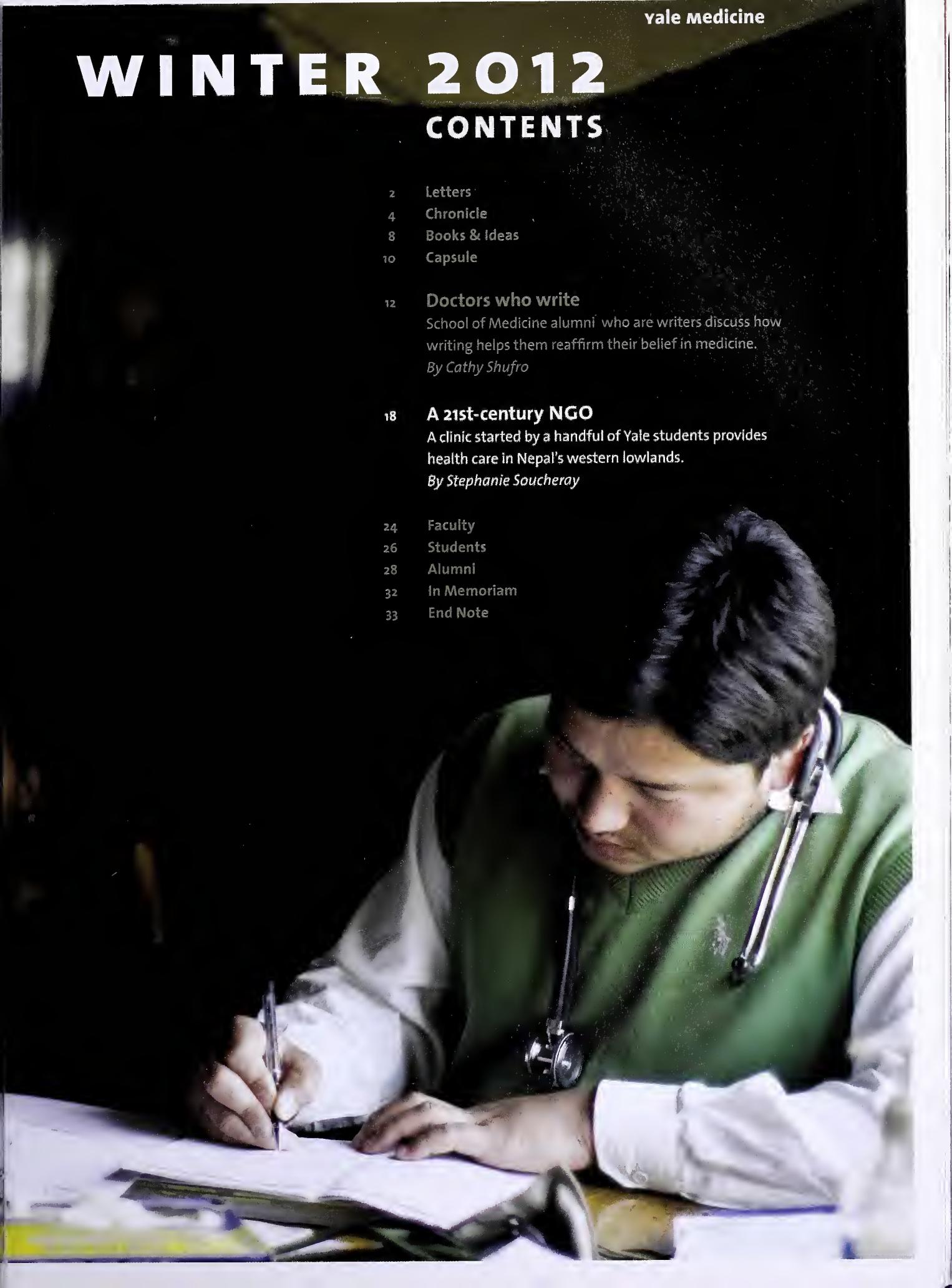
By Cathy Shufro

18 A 21st-century NGO

A clinic started by a handful of Yale students provides health care in Nepal's western lowlands.

By Stephanie Soucheray

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Public Health Service as a career

The U.S. Public Health Service Commissioned Corps (USPHS), one of the seven uniformed services, offers an alternative experience for physicians seeking a military service career [“Medicine and the military,” *Yale Medicine*, Spring 2011]. Similar to those in the military, physicians in the USPHS are commissioned officers who have the same basic responsibilities and benefits. The head of the USPHS is the U.S. Surgeon General. Physicians in the USPHS practice preventive/population medicine at the Centers for Disease Control and Prevention (CDC); research medicine at the National Institutes of Health; clinical medicine with the Federal Bureau of Prisons and the Indian Health Service; and military medicine with the U.S. Coast Guard.

My career was with the CDC and began with an assignment to the Epidemic Intelligence Service (EIS) program, which is a two-year learn-on-the-job experience for physicians and other doctoral-level health professionals. As an EIS officer, I learned the skills needed to carry out applied epidemiology and population medicine through community-based experiences. These included investigations of cholera in Bahrain and in the Maldives; shigellosis in the Marshall Islands; suspected botulism in Peru; and norovirus on a cruise ship—plus several domestic investigations, including the first outbreak of Legionnaires’ disease. These experiences prepared me for subsequent assignments that included a three-month tour with the World Health Organization in Geneva, followed by work as a state epidemiologist in the Florida State Health Department; deputy program director at CDC (which included leading a bioterrorism

response team at the 1984 Los Angeles Olympic Games); and director of the Sexually Transmitted Disease Program in San Diego, Calif. I retired from the USPHS in 2004 after 30 years of service.

I encourage medical school students interested in a career as a commissioned officer in any of the uniformed services to discuss opportunities with current and former commissioned officers and to look for such introductory opportunities as the CDC’s senior medical students elective programs. As I reflect on my career with the USPHS, I realize how fortunate I was to have had so many professionally rewarding experiences, worldwide travel, and an opportunity to provide services to those in need.

*Robert A. Gunn, M.D. ’66, M.P.H.
Captain, U.S. Public
Health Service (retired)
La Jolla, Calif.*

Physician Associates slighted in article

I read your article about medicine and the military expecting that you would mention the contributions of Yale PAs in the military. Once again I was disappointed—and frankly, insulted. I served as an Army PA in both Iraq and Afghanistan, as have many other Yale PAs, I’m sure. When patients and physicians with whom I served learned where I had been educated, they usually expressed increased confidence in my care, and I did my best to live up to their expectations. Based on the commendations and additional duties assigned to me, I believe I lived up to the standards expected of a Yale graduate. How disappointing, then, to return home and see that the school’s magazine continues to ignore us.

*Peter Fish, PA ’97
Major, U.S. Army*

Global Health Program not the first

I feel compelled to point out that although Michele Barry, M.D., HS ’77, and Frank J. Bia, M.D., M.P.H., FW ’79, were innovators in sending residents abroad, they were not the first to do so [“Yale’s global health program celebrates 30 years,” *Yale Medicine Online Extra*, July 2011].

I served as an intern and junior assistant resident on the Osler Medical Service at Johns Hopkins from 1966 to 1968. Each year, the Department of Medicine sent two residents to work on the cholera wards of the Infectious Diseases Hospital in Calcutta, and I was sent there in early 1968. This was a time when clinical investigators under the direction of Nate Pierce, M.D., were working on the formula for oral rehydration therapy (ORT). Within a short period of time, a formula was worked out and introduced in the field. ORT saved thousands of lives in the cholera epidemics that accompanied the Indo-Pakistan War of 1971, and it became the backbone of WHO’s Global Diarrheal Diseases Control Program a few years later.

Needless to say, my experience in Calcutta, together with my two years with the Yale-China Association in Hong Kong in 1959–1961, changed my life. I imagine that Yale’s global health program has had similar effects on the residents who have been sent abroad over the past 30 years.

*David S. Fedson, M.D. ’65
Sergy Haut, France*

CORRECTION

An obituary in the Autumn 2011 issue of *Yale Medicine* incorrectly listed the house staff years of Walter P. Sy, M.D. He completed his residency in 1965.

yale medicine

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A clinic in Nepal and doctors who write

In the fall of 2006, Jason Andrews, M.D. '07, then a student at the School of Medicine, approached *Yale Medicine* to ask if we'd be interested in writing about a project he and his classmates had undertaken. They were starting a clinic in Achham, a remote region in western Nepal. Students often ask us to write about their projects. I told Jason what I tell the others—let's wait until your project is up and running. The clinic, called Nyaya, the Nepali word for justice, soon opened its doors—but getting a story proved challenging. A writer in Kathmandu, Nepal's capital, was willing to visit the site, but an uprising by Maoist rebels forced her to cancel the trip. Indeed, it can take three days to travel from Kathmandu to Achham, a trip of about 260 miles that usually takes about 30 hours but is often stymied by landslides, flooding, and bad roads. Last summer Stephanie Soucheray, our summer writing intern, began interviewing Andrews and others for the article from our offices in New Haven. Her story shows how a group of students created a sustainable locally staffed clinic that has brought health care to an area that desperately needs it.

And our series on alumni career choices continues with Cathy Shufro's profiles of six physicians who are also writers. Some started out as doctors and turned to writing later in their careers. One was a journalist who became a doctor who is now a consultant for a TV doctor show, and another studied medicine in order to write about it. Each has found a way to bring some of the mysteries of medicine to a broad audience.

John Curtis

Editor

SECOND OPINION BY SIDNEY HARRIS





TERRY DAGRADI

Schwartz said it costs roughly \$1,000 per student to provide paper copies of all course materials, which is about the same price as an iPad and supporting apps. "We pretty much break even," he said, "but the iPad is better for the environment—and as an information delivery system, it's much more versatile."

It takes students about 30 minutes to download the entire curriculum for one year on the iPad, although they are advised to download the fall, winter, and spring courses separately because faculty update documents until the start of the course. But what administrators are realizing is that the iPad is more than just an efficient and environmentally smart curriculum delivery system; it enhances the way courses are taught.

Robert L. Camp, Ph.D. '92, M.D. '97, who teaches pathology to first- and second-year students, said the iPad is ideal for small-group teaching. "Computer screens, which we used to use, create a barrier between you and the person you are talking to. It's not interactive. But the iPad is more like a piece of paper. You hold it more like a book and you can pass it around. It tends to engender more group thinking and group discussion."

Nine students participated in the pilot iPad program—six were tech-savvy and three weren't. They met with Schwartz, IT specialist Gary Leydon, and curriculum coordinator Leigh Cromey once a week during the spring semester to discuss the iPad and how it was working.

"Originally they wanted to see how much we could depend on it," said Nicholas Bergfeld, a member of the pilot



JOHN CURTIS (2)

TOP Richard Belitsky and Michael Schwartz decided to offer iPads to all medical students in an effort to go green. The medical school was spending about \$1,000 on paper copies of the medical curriculum—about the cost of an iPad.

ABOVE Jorge Ramallo-Pardo uses the iPad on his clinical clerkships to keep notes on patients.

Students begin new semester with iPads

The devices save paper and allow a more interactive curriculum, say students and faculty.

A move to make the School of Medicine a greener campus has demonstrated the potential of new technology to change the ways in which faculty teach and students learn.

"It's hard to think of anything else that has had such a profound and rapid impact," said Michael L. Schwartz, Ph.D., assistant dean for curriculum, referring to a pilot program in which a handful of students were given iPads to download course curricula, take notes in class, and update course material. Based on the success of the pilot program conducted during the 2011 spring semester, all 518 medical students received iPads this fall.

group who is now in his second year. "Using it to take notes in class was their baseline goal, but we quickly exceeded that." The iPads altered the learning process in a positive way, he said. In a pathology lab, for example, they allowed for a much greater level of collaboration by synching with the instructor's presentation, enabling students to answer survey questions and draw on the slides in real time. "It made the class a lot more interactive, a lot more fun," he said. During his clinical studies, Bergfeld can foresee the iPad enhancing his interaction with patients. "You and the patient can look at their lab test results, X-rays, or whatever else together. It enables a greater level of personal connection."

A self-described "paper person," Vicki Bing said she had "huge reservations" before joining the pilot program. "I absolutely have to have everything printed out, so I didn't know how an iPad could replace that." But after a semester of using the tablet, she said, "I really, really loved it." Bing said she appreciates having access to all the course material while listening to a lecture. She also welcomes the iPad's portability. "I travel a lot, and I used to bring paper copies of everything with me to study on the road," she said. "With the iPad it's so much easier. It's all right there with the touch of a finger."

In giving its students iPads, Yale is part of a growing trend at medical schools across the country, including those at Brown; the University of California, Irvine; Stanford; and the University of Minnesota.

Yale's program is different in that the school is giving iPads to all its students, not just first- and second-years. Yale has also encrypted its iPads so that

they are security/privacy-compliant. This feature will allow third- and fourth-year students to use them during their clinical electives. The original plan was to give iPads only to first- and second-year students, but third- and fourth-years, who use their personal laptops for their clinical electives, balked at a recent requirement that their laptops be encrypted—they considered it an invasion of privacy and an inconvenience because the encryption program shut down their computers every few minutes. The solution? School officials decided to provide encrypted iPads to third- and fourth-year students for their clinical work.

Bergfeld said that the overall message he's hearing from fellow students is that they are looking forward to incorporating the iPad into their study habits. "The administration spent a lot of time making sure it was feasible," he said. "So far it's everything we could have hoped for."

—Jennifer Kaylin



First-year students use the iPads during a cell biology lecture by Peter Takizawa.

ENERGY INSTITUTE AT WEST CAMPUS

A \$25 million gift from a Yale College alumnus and his wife will help launch the Energy Sciences Institute on Yale University's West Campus, President Richard C. Levin announced in September. The institute will join the five other institutes on the West Campus in cancer biology, chemical biology, microbial diversity, systems biology, and biodesign.

During the institute's start-up phase, the university will recruit new faculty members, including a director; dedicate 40,000 square feet of laboratory space on the West Campus to the institute; and launch interdisciplinary research programs spanning Yale's science and engineering departments. The institute will bring together physicists, chemists, geologists, biologists, and engineers to develop solutions to the world's energy challenges.

"The cutting-edge research that will be conducted at this new Energy Sciences Institute is vitally important," said Thomas F. Steyer, a hedge fund manager and graduate of the Class of 1979, who made the gift with his wife, Kathryn A. Taylor.

—John Curtis

HOSPITALS TO MERGE

Yale-New Haven Hospital (YNHH) and the Hospital of Saint Raphael (HSR) announced in September that they had signed an agreement that would create a single hospital with two campuses. According to officials of both hospitals, the merger will enhance health care quality, access, and efficiency for Greater New Haven and the broader region.

Under the agreement, YNHH will purchase the assets of HSR; HSR will continue to provide medical care consistent with the ethical and religious directives of Catholic Health Care Services; HSR liabilities will be addressed; and YNHH will make investments in the HSR campus and expand its clinical activity.

With the agreement in place, the Connecticut Attorney General's Office, the Connecticut Office of Health Care Access, and the Federal Trade Commission will begin a regulatory review of the transaction.

—J.C.

A Yale clinician ponders the ethics of a seeding trial masquerading as research

In the June 2011 issue of *Archives of Internal Medicine*, researchers described their discovery of a seeding trial for the epilepsy drug gabapentin, sold under the trade name Neurontin. The trial was conducted 15 years ago by Parke-Davis (bought by Pfizer in 2000). Under the guise of studying gabapentin's dosing—which had already been clinically established—the company enlisted more than 2,000 patients and 700 investigators. The trial's real goal was to increase prescriptions of the drug.

David A. Kessler, M.D., the commissioner of the Food and Drug Administration and later dean of the School of Medicine, sounded an alarm about the use of seeding trials in a 1994 article in *The New England Journal of Medicine*. The article described such trials as having little scientific value and as "thinly veiled attempts to entice doctors to prescribe a new drug being marketed...." Fourteen years later Harlan M. Krumholz, M.D., M.S., the Harold J. Hines Jr. Professor of Internal Medicine, reported in the *Annals of Internal Medicine* on a 1999 seeding trial by Merck to market its arthritis drug Vioxx.

Last summer Joseph S. Ross, M.D., M.H.S. '06, assistant professor of medicine and co-author of the Vioxx report and senior author of the gabapentin report, met with *Yale Medicine* to discuss seeding, whistle-blowing, and the future of industry-sponsored trials.



How did you and your colleagues discover that a 15-year-old trial may have been a seeding trial?

Several years ago colleagues published in *Annals of Internal Medicine* an interesting review of a limited set of litigation documents that described Parke-Davis' promotion of gabapentin. Marketing involvement in the Study of Neurontin: Titrate to Effect, Profile of Safety (STEPS) trial was briefly mentioned, but discussion was incomplete. The recent availability of the complete documents produced as part of the litigation provided a unique opportunity to examine the STEPS trial in more detail.

Can you describe the elements of STEPS that pointed to a seeding trial?

Seeding trials are challenging to identify, but the internal documents clearly demonstrated that STEPS was a seeding trial posing as a legitimate scientific

study. For instance, the trial itself, not trial results, was part of a marketing strategy used to promote gabapentin and increase prescribing among investigators without informing trial patients or investigators. Investigators were selected for participation based on whether they were high prescribers in their area. After the trial, examination of rates and dosages of gabapentin prescribing showed that STEPS investigator participation in the trial was positively associated with greater gabapentin prescribing.

What are the risks of seeding trials?

Seeding trials pose several real dangers. First, they undermine the integrity of the clinical trial research process, exposing subjects to an experimental medication for marketing, rather than scientific purposes. Second, seeding trials unethically recruit

In an article published last year, Joseph Ross and colleagues criticized the practice of “seeding trials,” which are designed not for medical or scientific purposes but to boost sales of a drug.



TERRY DAGRADI

patients to participate because they are not provided with full informed consent. Finally, seeding trials undermine the medical literature when they are published, because the trials are designed by marketing to show the product’s benefit, thus biasing the evidence available in the literature.

There is a whistleblower element to the article. Were you worried about offending fellow investigators and physicians?

My colleagues and I made the decision that it is more important to take a stand against these unethical trials in an effort to prevent them in the future. We expect that many companies have long conducted seeding trials as standard operating procedure. We are not interested in punishing acts from the past but hope that by exposing past practices, the public

and professional outcry will prevent them in the future.

What’s your recommendation for staying ethical in pharma-sponsored Phase IV clinical trials?

Promoting the importance of ethical conduct is one step, so if evidence of other seeding trials is found in the future, the profession would frown ever more severely. Other steps that may prevent seeding trials include clinical trial registries. Similarly, steps to enhance the current institutional review board system could also be helpful. However, at the end of the day, physicians and the pharmaceutical industry need to make the decision not to participate in unethical clinical trial research and to keep the focus on science rather than on marketing.

—Stephanie Soucheray

WHY AGING MAKES US FORGETFUL

Anyone who has searched for missing bifocals only to find them in the crisper drawer can find an explanation—and some hope—in a study from Yale researchers about the battle against age-related memory loss. Amy F.T. Arnsten, PH.D., professor of neurobiology and of psychology, reported in the July 27 issue of *Nature* that the neural networks of middle-aged and older brains are weaker and slower than those of younger brains.

Arnsten’s study focused on age-related changes in the prefrontal cortex (PFC), the area responsible for abstract thought and reason as well as information recall (*Why did I come upstairs?*) in the absence of visual cues. As we age, the PFC accumulates excessive levels of a signaling molecule called cyclic adenosine monophosphate (cAMP), which can weaken prefrontal neuronal firing and may make these circuits more vulnerable to neurodegeneration.

The good news is that inhibiting cAMP with guanfacine, an FDA-approved hypertension medication, can combat the deterioration of neural networks.

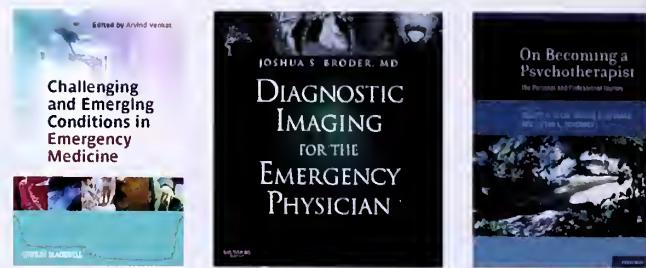
—S.S.

MENTHOL CIGARETTES MORE ADDICTIVE

Menthol cigarettes may be more addictive than cigarettes without menthol because they reduce the protective respiratory responses to irritants in cigarette smoke, according to a study by researchers at Yale and the University of Connecticut School of Pharmacy, published online in September in *The Journal of the Federation of American Societies for Experimental Biology*.

The scientists also say that the biggest danger is to young smokers. “Menthol may make smoke inhalation easier to tolerate and therefore promote nicotine addiction and smoking-related illness,” said author Sven-Eric Jordt, PH.D., associate professor of pharmacology at the School of Medicine. “Studies indicate that most young people smoke menthol cigarettes. So they are being exposed to higher levels of nicotine and other toxic substances at a young age, which may lead to rapid addiction and ultimately to the development of smoking-related disease.”

—John Curtis



Lessons from the Titanic

The ship's infamous sinking provides insights into management and leadership.

There's a trend in business publishing these days: books built around unlikely case studies. Consider *Shackleton's Way: Leadership Lessons from the Great Antarctic Explorer*; and *Tony Soprano on Management: Leadership Lessons Inspired by America's Favorite Mobster*. Now there's a new title, co-authored by David C. Tate, Ph.D., FW '00, assistant clinical professor of psychiatry: *Sink or Swim: How Lessons from the Titanic Can Save Your Family Business*.



Sink or Swim: How Lessons from the Titanic Can Save Your Family Business

Surely no business owner would seek to emulate the combination of design flaws, construction weaknesses, and operational misjudgments that sank the Titanic.

But it turns out that the story of the Titanic can offer insights into the pitfalls of running a small family business. As Tate and co-author Priscilla M. Cale, M.B.A., write, "What initially seemed counter-intuitive ... turned out to be absolutely correlative."

Tate and Cale provide psychological insights into the personal frailties and structural problems that, taken together, doomed the Titanic. They examine team fragmentation (some iceberg warnings never reached the captain); ineffective leadership (the captain never alerted his officers that the ship was sinking); and overconfidence (the Titanic carried only half the lifeboats necessary because the ship was "a lifeboat in herself"). For each factor that contributed to the 1912 disaster, the authors reflect on similar problems that can arise in ordinary family firms.

They argue that the U.S. economy depends on such insights: Family firms employ nearly six in 10 workers and generate half the nation's GDP. But earnings are only part of the authors' point. In firms that endure, "the family will have learned to be stewards of values that bring enrichment." Ultimately, a family firm's legacy "is about enrichment, not riches."

—Cathy Shufro

Challenging and Emerging Conditions in Emergency Medicine

edited by Arvind Venkat, M.D., '00, with contributions by Esther Choo, M.D., '01 (Wiley) This book provides guidance for evaluating and diagnosing complex disease presentations in the emergency room. It addresses such chronic conditions as congenital heart disease, cystic fibrosis, morbid obesity, intellectual disability, and intestinal failure.

Diagnostic Imaging for the Emergency Physician

by Joshua S. Broder, M.D., '99 (Saunders) This text takes a step-by-step approach to selecting and interpreting commonly ordered diagnostic imaging tests. It presents clinical decision rules; describes time-efficient approaches for the emergency physician to identify critical radiographic findings that impact clinical management; and discusses such topics as radiation risks, oral and IV contrast in abdominal CT, and MRI versus CT for occult hip injury.

Evidence-Based Practices and Treatments for Children with Autism

edited by Brian Reichow, Ph.D., associate research scientist in the Child Study Center; Domenic V. Cicchetti, Ph.D., senior research scientist in the Child Study Center; Fred R. Volkmar, M.D., Irving B. Harris Professor of Child Psychiatry and director of the Child Study Center; and Peter Doehring, Ph.D. (Springer) This book offers perspectives on topics related to autism ranging from the historical underpinnings of autism treatment to the use of psychopharmacology and the implementation of evidence-based practices.

In addition, the book presents a methodology for evaluation designed to reduce the risks and inconsistencies associated with variations among definitions of autism terminology.

The Psychosis-Risk Syndrome: Handbook for Diagnosis and Follow-Up

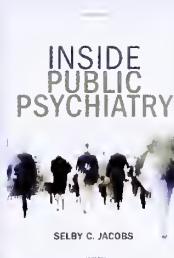
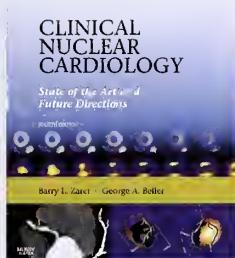
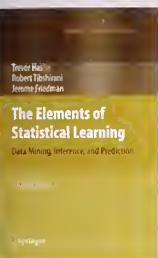
by Thomas H. McGlashan, M.D., professor emeritus of psychiatry; Barbara C. Walsh, Ph.D., research associate in psychiatry; and Scott W. Woods, M.D., professor of psychiatry (Oxford University Press) This handbook details the diagnostic tools and building blocks that constitute the Structural Interview for Psychosis-Risk Syndromes, or SIPS. The handbook covers the SIPS evaluation, the initial interview, the evaluation process, and the summary session consisting of findings and future options.

On Becoming a Psychotherapist: The Personal and Professional Journey

edited by Robert H. Klein, Ph.D., lecturer in psychiatry; Harold S. Bernard, Ph.D.; and Victor L. Schermer, M.A. (Oxford University Press) This book explores how psychotherapists develop as practitioners both through professional training and personal experience. The book addresses current controversies that surround what constitutes the optimal set of experiences and characteristics for the developing psychotherapist.

Recursive Partitioning and Applications, 2nd ed.

by Heping Zhang, Ph.D., professor of public health (biostatistics) and in the Child Study Center; and Burton H. Singer, Ph.D.,



former chair of the Department of Epidemiology and Public Health (Springer). This book focuses on recursive partitioning strategies in statistical analysis as a response to the challenge of pathway characterization. The book addresses statistical issues—conceptual and computational—in the context of important scientific questions. This edition includes new material devoted to forests from predictive and interpretive perspectives.

Clinical Nuclear Cardiology: State of the Art and Future Directions, 4th ed.

by Barry L. Zaret, M.D., Robert W. Berliner Professor of Medicine (cardiology), and professor emeritus of medicine; and George A. Beller, M.D. (Mosby) The authors address the latest developments in technology, radiopharmaceuticals, molecular imaging, and perfusion imaging. The fully searchable text at expertconsult.com includes illustrated case studies that use a variety of imaging modalities.

The Essence of Analgesia and Analgesics

edited by Raymond S. Sinatra, Ph.D., M.D., professor emeritus of anesthesiology; Jonathan S. Jahr, M.D.; and J. Michael Watkins-Pitchford, M.D. (Cambridge University Press) This manual provides clinicians with information about the pharmacologic principles and clinical use of pain medications. Each chapter provides an overview of a particular drug, covering chemical structure, mode of activity, indications, contraindications, common dosages and uses, advantages and disadvantages, and drug-related adverse events.

Inside Public Psychiatry

by Selby C. Jacobs, M.D., M.P.H., professor emeritus of psychiatry and of epidemiology (People's Medical Publishing House—USA) This book tells the story of public psychiatry, with examples from the author's experience running the Connecticut Mental Health Center in New Haven.

The Comprehensive Treatment of the Aging Spine: Minimally Invasive and Advanced Techniques

by James J. Yue, M.D., associate professor of orthopaedics and rehabilitation; Richard D. Guyer, M.D.; J. Patrick Johnson, M.D.; Larry T. Khoo, M.D. '95; and Stephen H. Hochschuler, M.D. (Saunders) This book provides state-of-the-art coverage of both operative and nonoperative treatments for clinical pathologies of the aging spine. The authors cover such topics as minimally invasive fusion, dynamic stabilization, and intraspinal and biologic devices.

Preventive Cardiology: A Companion to Braunwald's Heart Disease

by Nathan D. Wong, M.P.H. '85, Ph.D. '87; Roger Blumenthal, M.D.; JoAnne Foody, M.D. (Saunders) This edition addresses the prevention and risks of cardiovascular disease, with the aim of delaying the onset of disease and moderating its effects and complications.

The descriptions above are based on information from the publishers.

SEND NOTICES OF NEW BOOKS TO Cheryl Violante, Yale Medicine, 1 Church Street, Suite 300, New Haven, CT 06510, or via e-mail to cheryl.violante@yale.edu

Finding the right words for pain

For a person in great pain, wrote Virginia Woolf, "language at once runs dry." Woolf's words resonate for David Biro, M.D., Ph.D., who couldn't describe his own suffering after a bone marrow transplant. The "privacy" of his pain isolated him from his loved ones, Biro told the audience at a Humanities in Medicine lecture in October.

Biro, a dermatologist at the State University of New York Downstate Medical Center in Brooklyn, came to recognize that metaphors convey the experience of pain on a level that ordinary language cannot. As Biro researched his book *Listening to Pain*, he found three types of metaphors: first, images (often clichés) that suggest weapons—a shooting pain in the wrist or a knife in the gut; second, images of pain "mirrored" outside one's self, as by the silent screamer in Edvard Munch's paintings; and third, images that convey the anatomy of pain, as in painter Frida Kahlo's 1944 self-portrait, which shows her shattered spine as a broken stone column.

Even a faltering attempt to communicate about pain, Biro said, eases the sufferer's isolation. "As long as the conversation lasts, we are not alone."

—C.S.

Support federal research funding

Bracketing her remarks with anecdotes drawn from personal experience, U.S. Representative Rosa DeLauro gave an impassioned defense of continued federal funding for biomedical research, even as Congress looks to balance the budget by cutting spending.

Speaking at the October Medical Student Council Perspectives on Medicine series, DeLauro told the packed audience that in 1991 she was diagnosed with stage 1 ovarian cancer. "Because of the grace of God and biomedical research, my life was given back to me," she said. Since then, the 10-term congresswoman has been a progressive voice for health policy reform.

DeLauro said one of the proudest moments of her career was March 23, 2010, the day President Barack Obama signed the Patient Protection and Affordable Care Act into law. "It has the ability to transform people's lives," she said. Noting that some lawmakers want to repeal it to reduce the deficit, she said, "I will fight that as hard as I can, with every fiber I have. It is not a slush fund to deal with the deficit."

—Jennifer Kaylin





The Search for the Cushing Brains

With the neurosurgeon's collection on display, a trip to the "brain room" and a rite of passage are no more.

By Stephanie Soucheray

By now the story of Harvey Cushing's brains is well-known. When the neurosurgeon died in 1939, he left his brain tumor collection, patient registry, and glass plate photos to Yale, his undergraduate alma mater. For decades the 650 jars of brain specimens sat abandoned and ignored in the basement of Harkness Hall. Dripping limestone walls were the only companions for Cushing's malignant tumors and detailed photographs, a collection he had begun building in 1902. After years of neglect, the collection went on public display in the Cushing Center in the basement of the Cushing/Whitney Medical Library in 2010.

Before the brains' removal from the basement of Harkness, Yale employees found a large white poster board on the floor. "Leave Only Your Name. Take Only Your Memories" was scrawled on top of the board; underneath were the signatures, doodles, and "we were here" markings of several generations of Yale medical students who had ducked under dusty pipes and stumbled across abandoned anatomy dummies in the recesses below their dormitory to find the brain collection.

The public unveiling of the Cushing brains marked the end of an era. For decades, students who visited the brains were privy to a pilgrimage and rite of passage. Though the brains weren't hidden per se, they

were obscured in a faraway room, and the trip wasn't exactly condoned by the school. "We tried to keep students out with locks and reinforced wooden panels," explained Terry Dagradi, a Yale photographer who has curated Cushing's photographs. "No matter what we did, the students found a way to get down there and into the brains."

"I remember thinking, 'I'm inhaling diseased brain matter,'" said Jessica Bod, a fifth-year student who was among the last to see Cushing's brains in their basement tomb. She had "bid on an adventure" with classmate Sascha Qian during the Hunger and Homelessness Auction in 2008. The adventure brought her into the bowels of Harkness, where entry into the brain room required removing a panel in the door and crawling through.

"It was definitely creepy, and I remember whoever went first had to lead in the dark," said Bod. "I hadn't realized the brains were actually under the dorm. It was very 'Harry Potter.'"

Antony F. Chu, M.D. '02, visited the basement a few times as a student. He had a job in the audiovisual department, which meant he also had a set of keys that could open a number of Harkness doors. Visiting the brains, he said, was a bonding—and inspiring—activity. No one had exact directions to the "brain room," so each new group of students had to forge its own path.

"I'll never forget the shadows of the brains on the walls," said Chu, who described the experience as one born of curiosity and wonder. Nobody (to his knowledge) ever tried to remove or damage the brains. "There was such a sense of something bigger and greater in that brain room."

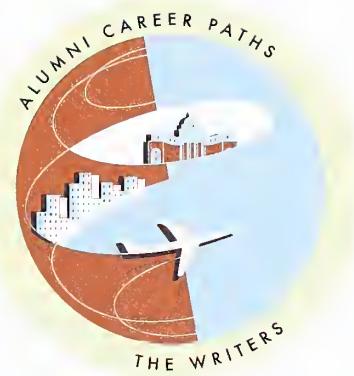
Dagradi felt that same sense of otherness the first time she entered the room. Her feelings intensified after she began to print some of Cushing's 10,000 glass plate photographs. "There are these really detailed and touching portraits of children, girls with big bows in their hair," said Dagradi. "The photos really had an impact on me."

Though Bod is glad that the brains are well-preserved, she feels nostalgic for their former basement home. "Going to find the brains was like standing on the seal of the library or the second-year show, a tradition that made the School of Medicine," said Bod. "Future students won't have that."

Do you have a memory of a nocturnal jaunt to the Cushing brains that you'd like to share? If so, please write to Terry Dagradi, terry.dagradi@yale.edu, and tell us about your visit to the basement of Harkness.



Randi Hutter Epstein came to medical school not to be a doctor, but to learn medicine so she could write about it.



Doctors who write

School of Medicine alumni discuss how writing helps them reaffirm their belief in medicine.

By Cathy Shufro

Making the first cut in a surgical patient shares something with writing the first line of an essay, says surgeon and writer Richard A. Selzer, M.D., HS '61.

"You are making an incision when you sit above a blank page," says Selzer, the nationally known author of 13 books of essays and short stories, mostly about medicine. "Call it blood and ink," he says. "That's the story of my life."

When he first began writing seriously in the mid-1970s, Selzer recalls, "My colleagues in surgery found it mystifying. They said, 'What's the matter with you? Isn't surgery enough for you?' ... I was alone."

No longer: Yale-trained physicians have increasingly combined medicine and writing. Notable among them are National Book Award winner Sherwin B. Nuland, M.D. '55, HS '61; memoir writer Dora Calott Wang, M.D. '90; her classmate, journalist and author Randi Hutter Epstein, M.S., M.D. '90; poet Dagan Coppock, M.D. '04; and *The New York Times Magazine* columnist and author Lisa Sanders, M.D. '97, HS '00. They say that their understanding of medicine informs their writing. And except for Epstein, who never intended to practice medicine, they all find that their writing has provided insight into their work as physicians.

The prevalence of great physician-writers suggests an affinity between medicine and writing. Among the best-known practitioners are the Russian short-story writer and playwright Anton Chekhov; the poets John Keats and William Carlos Williams; and Sir Arthur Conan Doyle, who created Sherlock Holmes and his physician sidekick, Dr. Watson. Contemporary physician-writers include Oliver Sacks, M.D.; Jerome Groopman, M.D.; Atul Gawande, M.D.; and Abraham Verghese, M.D., author of the popular novel *Cutting for Stone*. Khaled Hosseini, M.D., wrote *The Kite Runner*; Robin Cook,

M.D., writes medical thrillers; and the late Michael Crichton, M.D., wrote popular fiction on everything from dinosaurs to marijuana smugglers to extraterrestrial plagues.

Staying sane and the urge to write

Selzer began writing when he was a medical officer in the Army in Korea during the mid-1950s. "In order to keep my sanity," he says, "at the end of every day, I would write down what happened." On returning to New Haven to begin his surgery residency, Selzer says, "I completely forgot about this journal. I was busy learning to become a doctor and had no intention of being a writer."

And then in the mid-1970s, halfway into his 25-year career on the Yale faculty, Selzer again felt the urge to write. "One day the gate to my imagination sprang open," he says. "It was an awakening, an epiphany. I began to see my life in literary terms. I began writing furiously." Between 1976 and 1982, he wrote three of his best-known books: *Mortal Lessons: Notes on the Art of Surgery*; *Confessions of a Knife*; and *Letters to a Young Doctor*. His writing, he says, "is unconscious. It just pours out." When he finds a passage of prose or poetry that strikes him, Selzer says, "I write it down and study it."

Although Selzer bases his stories on his own experiences, he says, "I give myself all the freedom in the world to make things up. But each story has a grain of truth. I'm not really interested in the facts. I'm interested in the truth, which lies beneath the real. It is the *real* real that lies beneath the real."

Selzer describes writing as "the reason for which I was born." He continues to write, using Yale's Beinecke Library as an office. His latest book, *Diary*, was published by Yale University Press last spring.



Finding a second calling

Sherwin Nuland became a surgeon, as he describes it, “quite simply because it’s such great fun.” But when he sat down to write a series of biographies of historically important doctors more than two decades into his career, he found a second calling. Now he is internationally known as a writer and scholar. The biographies became his first book, *Doctors: The Biography of Medicine*, published in 1988. His best-known book, *How We Die: Reflections on Life’s Final Chapter*, won a National Book Award in 1994 and was on *The New York Times*’ best-seller list for eight months. Nuland’s work includes short biographies of Leonardo da Vinci and the 12th-century physician-philosopher Moses Maimonides. Nuland also wrote a memoir, *Lost in America: A Journey with My Father*, which he says may be his best work.

The surgeon’s schedule presented opportunities for Nuland to write; during delays between cases, usually unexpected, he would retreat to the library and write. “The Medical Historical Library is two football fields away from the operating room,” he says. “I just never wasted any time.” Because few physicians have such gaps in their day, he says, “I couldn’t have done this if I was in pediatrics or internal medicine.”

Nuland says writing informed his life as a surgeon. “I wrote for about six or seven years before beginning to do it full time. There’s no question that writing, as well as the research and contemplation required to do it, gave me a much greater perception of what we call the human condition; helped me to understand the perspective of patients and families; and acquainted me with the uncertainties of medical knowledge and clinical decision making.”

When surgeons and writers make decisions, Nuland says, they draw on everything that’s occurred in their lives up to that moment. But whereas a surgeon in the OR deliberates before making a choice, “In writing, you’re not nearly as aware that you’re making decisions. You’re allowing your unconscious mind to float free.”

At 80, retired from surgery since age 61, Nuland continues to study and write—with time off to luxuriate in the company of visiting grandchildren. He reads aloud each newly written paragraph to make sure that he’s considered the nuance and resonance of each word. “You’ve got to be absolutely meticulous. You’ve got to hit that thing right on the head.”

Nuland also requires himself to be meticulous about facts. “The danger for medical writers is distorting things to make for literary effect.” Over time, he believes, a reader will recognize and resent distortions.

He imagines that reader as “a person very much like myself who has had a different life experience from my own.” Of his own experiences, Nuland values, above all, his 35 years as a surgeon. Although he hasn’t entered the OR for nearly 20 years, he views healing the sick as “the greatest satisfaction of life.”

“To carry a sick person through the burden of illness is a gift to the person who does it.”

“Doctors have not been well”

Dora Calott Wang’s memoir tells the story of an intimate relationship and how a third party damages it: the relationship is the one between doctor and patient, and the interloper is the insurance industry.

A psychiatrist at the University of New Mexico, Wang uses her personal story to describe the changes wrought by for-profit health care. “I thought memoir was a form begging to be applied to the telling of history,” says Wang. Her 2010 book is *The Kitchen Shrink: A Psychiatrist’s Reflections on Healing in a Changing World*.

“I wasn’t interested in the traditional doctor narrative about the romance of healing the patient, where the doctor is almighty and the patient is vulnerable. I wanted to write a different kind of doctor narrative, because the truth is the medical system and doctors have not been well,” she says. “It’s ridiculous that doctors should go through all this training and have to defer to the decisions of insurance clerks.”

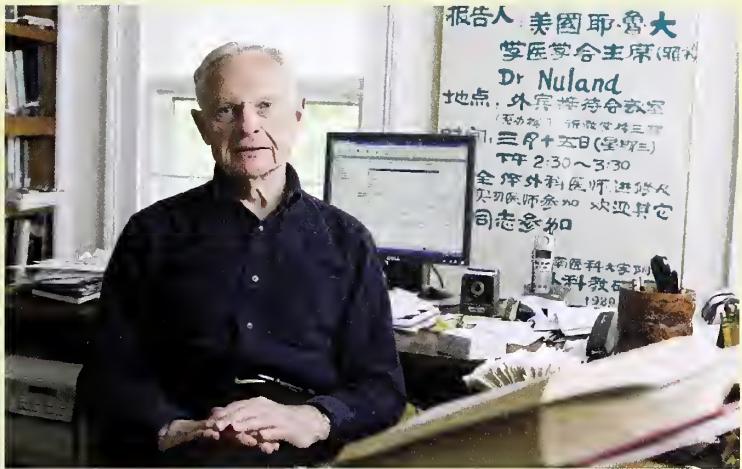
Wang was already interested in writing while in medical school, and the medical school chaplain, Alan C. Mermann, M.D., M.Div. ’79, encouraged her to take a year off to earn a master’s in English at the University of California, Berkeley. Selzer introduced her to the idea of writing at night. To write *Kitchen Shrink*, she slept from 8 at night until 2 a.m., then worked on the book for six hours before starting her day as a doctor (and mother) at 8 a.m. “There’s this excitement of getting up early and seeing what’s going to come out on the page.”

Wang wrote 40 drafts of the book. “It’s not linear. ... You change one thing, and the whole book changes. It’s like a river: you do something upstream, and everything downstream gets affected.”

Wang sees a correlation between seeking truth as a psychiatrist and seeking it as a writer. “A lot of my work as a psychiatrist is to get patients to see the truth. I think it’s time we tackled the truth of what’s happened to the medical profession. What does it mean that the insurance industry holds the purse strings on medical decisions? After all, our medical system is the moral infrastructure of our country, where life-or-death decisions are made each moment. Like a patient in denial, our



JOHN CURTIS



ROBERT LISAK



TOM BRAHL



TERRY DAGRADI

CLOCKWISE FROM TOP LEFT:

Lisa Sanders left a successful journalism career for medicine after watching a medical correspondent save a drowning woman.

Sherwin Nuland found a second calling when he began writing biographies of historically important doctors.

Richard Selzer began writing when he was a medical officer in the Army during the Korean War. “In order to keep my sanity, at the end of every day, I would write down what happened.”

Dora Calott Wang used her own experiences as a psychiatrist to tell the story of changes wrought by for-profit health care. “It’s ridiculous,” she said, “that doctors should go through all this training and have to defer to the decisions of insurance clerks.”



nation needs to face the truth. How can anything in this nation be healthy until we've healed the medical system?"

Despite her frustrations, Wang says, "I still think we're in a very privileged position of seeing so much of life and gaining the wisdom from knowing so many lives in intimate detail."

A career in medical journalism

Randi Hutter Epstein had already been accepted by the Columbia University Graduate School of Journalism when she arrived in New Haven for her medical school interview. She expected to be rebuffed when she told the admissions committee that she did not plan to become a clinician but rather to write about medicine. Instead, she found encouragement. And she got in.

By the end of her second year, however, Epstein had qualms. "I thought if I'm not going to practice, I should drop out of med school." Robert H. Gifford, M.D., HS '67, then the associate dean for student affairs, refused to let her leave. "He said, 'What you gain from being on the wards during third and fourth year will help you with your writing.'"

After graduation, Epstein worked as a medical reporter for the Associated Press (AP) in London. "There were glimmers where I thought maybe I could practice and write. But I think my heart was in reporting and investigating, which is so time-consuming and I never thought I'd be able to do it all—have a full-time practice, write reported pieces, and raise my children," says Epstein, the mother of four children. "I'm incredibly impressed with the doctor-writers who are balancing it all."

She faced culture shock working for the AP. As a medical student, she says, "I was very used to talking about 'maybes' and gray zones." She quickly discovered that wire service writing is "black and white." "It scared me at first," she says, "because nothing is certain." And although her editors scanned her prose for style, "no one checked my facts. ... But I did, relentlessly. My professors continued to be my professors. I learned so much from them while I was at Yale, and then I relied on them when I got my job at the Associated Press. I had a lot of their home numbers, and I've woken some of them up, saying, 'I need a quote, I need your advice; I'm on deadline!' This was before e-mail." In addition, she says, "I kept my medical school biostatistics book by my side. There were certain epidemiologists I knew really well."

Now an independent journalist and author, Epstein contributes to the "Science Times" section of *The New York Times* and has written for publications including *GlobalPost*, *Psychology Today*, and *The Washington Post*. She finds satisfaction not only in providing information about medical topics but also in creating a sense of community among readers. She remembers in particular a story for the *Ladies' Home Journal* in which she wrote about women

with autoimmune diseases. Readers told her that they "felt validated, with their fears and worries, when they read about these other women going through the emotional turmoil of living with these chronic diseases." Her first book, *Get Me Out: A History of Childbirth from the Garden of Eden to the Sperm Bank*, was published in 2010.

Dedicated to a poem

When Dagan Coppock is working on a poem, it follows him everywhere. Feeling this presence is what Coppock calls being "dedicated to a poem."

"It moves in and out of your consciousness during the day," says Coppock, who recently left a primary care practice near Boston to spend two years in Botswana as a preceptor for Beth Israel Deaconess Medical Center training program. "If you don't write it down, you'll forget it. I think that poets in the course of living are always on guard for inspiration," he says. "They are looking for the clues, the god in the gaps, in every moment. If a poet suddenly thinks his love is like a red, red rose, he wants to know why—what's the connection? A poem is like a bit of detective work to connect the dots between the two apparently disparate aspects of a metaphor."

"A doctor is a detective, too. ... A doctor tries to make a diagnosis or sort out some other problem, and a connection can seem just as revelatory or inspirational. Maybe I'm biased, but I think that primary care providers get more chances at such moments."

Coppock never considered making poetry his career. "I always thought that it was never enough to be only a poet. You have to be a mechanic and a poet, a teacher and a poet, a chef and a poet, a doctor and a poet. ... it doesn't matter. You have to be something else—something which gives impulse to your writing. Besides, I would have been too lonely being a writer alone."

Between college and medical school Coppock traveled to Nigeria on a Fulbright grant to write poetry and study the poetry of traditional healers. "When I came to Yale med, I needed a reader, a mentor, someone to help me find a community. Dr. Selzer was that person. With his help, we started a writing group. It kept me sane and healthy and circumspect during medical school." Coppock co-edited a collection of poetry by medical students and residents titled *Body Language: Poems of the Medical Training Experience*, published in 2006.

He sends his poems to medical journals rather than literary magazines—his work has appeared in *JAMA: The Journal of the American Medical Association* and in the *Journal of General Internal Medicine*. Poetry in medical journals, he believes, validates the connection between medicine and the humanities. Especially as doctors are pressured to do more in less time, he says, "Medicine can become a very automatic field, where we don't reflect." Poetry, he says, "forces you to think about things."

What might be missing from life

In the late 1980s, CBS television producer Lisa Sanders was on the banks of the Nantahala River in North Carolina taping a show on whitewater rafting with health reporter Bob Arnot, M.D. Suddenly Arnot disappeared.

When Sanders spotted him again, Arnot was on his knees beside the churning river, doing CPR. Sanders was surprised by the rush of admiration she felt as he revived a woman who had nearly drowned.

"It was the first time I'd thought about what might be missing from my life," she says. She'd won an Emmy Award and had worked in news for three major networks, but Sanders left a 12-year television career to study medicine in 1992.

As it turns out, internal medicine has reconnected her with journalism. Since 2002, Sanders has written the "Diagnosis" column for *The New York Times Magazine*. The column allows her to think about what she finds most compelling about medicine: the complex deliberations that lead to diagnosis. Before studying medicine, she'd imagined diagnosis to be formulaic: plug in facts, find answer.

Each monthly column tells the story of a patient with a constellation of baffling ailments. The story moves from mysterious symptoms to false diagnoses to resolution. Since March, the column has also appeared online (minus the correct diagnosis). The first time the column went online, 1,400 readers contributed guesses in less than two days. That response pleases Sanders: "I want this to be a conversation."

The column brought her back to television when producer Paul Attanasio asked Sanders to serve as technical advisor for a new medical drama "about an irritating, arrogant, drug-addicted doctor who hates patients and loves diagnosis." "That's not going to fly," she remembers thinking.

It flew: *House M.D.* has been an international hit on Fox since beginning its run in 2004. Sanders invents medical problems for the show's characters. And although she also reviews scripts for medical accuracy, she doesn't mind the liberties that *House* takes with matters of law: House frequently orders his team to break into patients' homes to find clues to their ailments. "I think it's a very good metaphor for the probing, impertinent questions that doctors ask—for that violation, that intimacy with a stranger, that is part and parcel of going to see a doctor," says Sanders. That intimacy, she says, "is why that trusting relationship has to be there."

Sanders often writes before dawn. She enjoys the silence of the house and the absence of inquiries about errant items of clothing and similar matters from her two teenage daughters. Rising early allowed her to write her latest book, *Every Patient Tells a Story: Medical Mysteries and the Art of Diagnosis*, while keeping up with her day job teaching Yale residents and seeing patients at Waterbury Hospital.

Just as seeing patients provides material for Sanders' writing, writing informs her work as a doctor and reminds her that seemingly routine symptoms sometimes signal

something unusual. "We have a limited number of symptoms and a vast spectrum of diseases," she says. "Writing reminds you every day that there's something interesting happening. It may remind you that curiosity killed the cat—but satisfaction brought it back." YM

—Cathy Shufro is a freelance writer in Woodbridge, Conn.

LaLisa Alita Anderson, M.D. '01 published a collection of oral histories titled *On the Other Side: African Americans Tell of Healing* in 2001. In 2006 she was an American Philosophical Society Fellow. About five years ago she placed her creative writing on hold; she presently works in a medical communications agency in Atlanta that supports pharmaceutical clients as they conduct oncology research and bring oncology drugs to market.

Pauline W. Chen, M.D., HS '98 is a surgeon, author, and columnist for *The New York Times*. She published *Final Exam: A Surgeon's Reflections on Mortality* in 2007.

John A. Elefteriades, M.D. '76, HS '81, FW '83 chief of cardiothoracic surgery and the William W.L. Glenn Professor of Cardiothoracic Surgery, has written four textbooks, including *Your Heart: An Owner's Guide*, with Lawrence S. Cohen, M.D., HS '65, the Ebenezer K. Hunt Professor Emeritus of Medicine. Elefteriades also wrote *The Woman's Heart: An Owner's Guide*, with Teresa Caulin-Glaser, M.D., and he is the author of *Transplant*, a medical thriller.

Robert L. Klitzman, M.D. '85 wrote *When Doctors Become Patients* in response to his own grief over the death of his sister, who died in the World Trade Center on September 11, 2001. Klitzman, a research scientist and associate professor of clinical psychiatry at the HIV Center for Clinical and Behavioral Studies at the New York State Psychiatric Institute and at Columbia University, is the author of five other books. He got his start as a writer by reviewing books at Yale, where his role models included Richard A. Selzer, M.D., HS '61, and Sherwin B. Nuland, M.D. '55, HS '61.

Bernie S. Siegel, M.D., HS '61 has written frequently about medicine and the healing process. His books include *Faith, Hope & Healing: Inspiring Lessons Learned from People Living with Cancer; A Book of Miracles: Inspiring True Stories of Healing, Gratitude, and Love; and Help Me to Heal: A Practical Guidebook for Patients, Visitors, and Caregivers (Essential Tools, Strategies, and Resources for Healthy Hospitalizations and Home Convalescence)*.

Alan A. Stone, M.D. '55 the Touroff-Glueck Professor of Law and Psychiatry at Harvard Law School, uses literature to interest students in the themes of psychology and justice. He is the author of *Movies and the Moral Adventure of Life and Law; Psychiatry and Morality: Essays and Analysis*; and co-editor of *The Abnormal Personality through Literature* with Sue Smart Stone.



Are you a physician who writes or works in another of the fields we'll be profiling in our "Alumni Career Paths" series? Do you know medical school alumni, former Yale house staff, or fellows who are? Send us the names and then check the Web edition of *Yale Medicine* to view an expanding list of alumni with similar interests. You can write to us at yymm@yale.edu and view the list at yalemedicine.yale.edu.

"Alumni Career Paths" future topics:

- International health and research
- The front lines of clinical practice
- Academic medicine

Nayapala Hospital which is operated by Nyaya Health, was founded by Yale students and opened in 2009. The hospital

serves an area of 250,000 people and sees more than 150 patients per day, all of whom receive treatment free of charge.

A 21st-century NGO



A handful of Yale medical students opened a clinic and hospital in a remote corner of Nepal. From 8,000 miles away, via the Internet, they provide support. Here's how they do it.



By Stephanie Soucheray

The last time Ryan Schwarz, M.D. '11, M.B.A. '11, was in Kathmandu, he told a Nepali man that he was traveling to Achham, a district in the western part of the country, on behalf of Nyaya, a nonprofit health organization.

"The man looked at me and smiled, and said, 'Assam is a beautiful part of India,'" Schwarz said. "I told him, 'No, Achham. Here in Nepal.' He just looked and shrugged. He had never heard of it."

Achham, a region of 250,000 people, is South Asia's land that time forgot, or more likely ignored. The journey from Kathmandu, about 260 miles away, can take up to three days—more if monsoons have washed out the few dirt roads on which rickety buses travel. The region is slowly recovering from a decade-long civil war and suffering the effects of HIV, malnutrition, and lack of maternal care. Five years ago, the region didn't have a single allopathic doctor.

Now Achham is home to Nyaya Health, a nongovernmental organization (NGO) started by three Yale students in 2005. Nyaya runs the Bayalpata Hospital, a fully operational free hospital that is staffed by Nepali health care workers and treats more than 150 patients per day. A dedicated—and e-mail addicted—group of Yale medical students and graduates monitors the operations of the hospital from their smartphones in New Haven, Boston, and San Francisco. They do not see themselves as "running" the hospital and are careful on their yearly visits not to interfere with its day-to-day operations. Instead, the Yale students and graduates handle donations, publicity, and finances so that their vision of a free health care system in rural Nepal can be realized by the people to whom it matters the most: the Nepalese.

Nyaya, which means "justice" in Nepali, is not the first NGO started by Yale medical students, but it may be the first NGO undertaken by members of the millennial generation—people born between 1980 and 1995. Nyaya's founders use the Internet; involve the local government to ensure that their efforts will be protected; and don't worry about the lack of an office, a proper mailbox, or even roads.

"A different generation, a generation ahead of us, may not have the same understanding of our work that we do," said Schwarz. "But we believe that free health care is every citizen's right, and we think of citizenship as global, not national."

It's that philosophical underpinning and the explosion of the millennials' interest in global health—not to mention the Internet—that allows Nyaya to create a radical health care system 8,000 miles away from New Haven and, in the process, show how to build a 21st-century NGO.

An encounter in New Haven

Jason Andrews, M.D. '07, visited Achham in 2006 between his fourth and fifth years of medical school. His wife, a Nepalese photographer, was working on a documentary there about women and children with HIV—an infection carried back to Achham by men who had traveled to India for work. Noting the region's abandoned hospital, Andrews saw an opportunity in a country that had fascinated him since his undergraduate days at Yale when he met a Nepali chef at the Royal India Restaurant in New Haven. "I came back and e-mailed two of my friends about the abandoned hospital," Andrews said.

Achham was supposed to be the site of a district hospital 25 years ago, but at the last minute, in response to demands from a community with more political influence, the government moved the hospital to a location eight hours away. "There was a devastating history to that hospital, which we later confirmed with several people," said Andrews. Troops arrived after the change was announced and six protesters were killed.

With no hospital in the region, doctors and nurses moved elsewhere and Achham remained a health care desert. In Nepal, health care is based on a user-fee system largely out of reach to the rural poor. Because the region is so isolated and travel so difficult, the lack of accountability in government-run clinics has resulted in a shadow medical economy. Rural doctors take supplies and drugs from government clinics and open up private practices in small villages, selling expired antibiotics at exorbitant prices.

Andrews, along with Duncan Smith-Rohrberg Maru, M.D. '09, Ph.D. '09, and Sanjay Basu, M.D. '09, Ph.D. '09, decided that they could change that landscape. They knew, however, that implementing their vision of a free first-world health care operation in the abandoned hospital was an ambitious undertaking in a region where most citizens don't have electricity. So they started with the Sanfe Bagar Medical Clinic.

"The clinic was in an old grain shed," said Smith-Rohrberg Maru, a resident in medicine and pediatrics at Brigham and Women's Hospital in Boston. "It was a classic NGO beginning, but we knew it was not possible to start off with a full hospital."

After organizing a pharmacy, painting the walls, and repopulating the clinic with Nepalese doctors, Nyaya turned over the clinical operation to the Nepali government in May 2009. That last step is a bit antithetical to traditional NGO models, but it's vital to the Nyaya vision.

"It was never meant to be a drop-in or expat-staffed model," said Andrews, an infectious diseases fellow at

Massachusetts General and Brigham and Women's hospitals. "It's not Doctors Without Borders. The idea has always been to create a sustainable model of health care for that community."

Nyaya staffed both the clinic and the hospital with local Nepalese—everyone from the hospital's accountant to the medical director, chef to ambulance driver is a local. Though Yale students are encouraged to visit Achham, their role is always to help the hospital meet its needs—not get in the way.

With the free clinic in the hands of the Nepali government, Nyaya turned its sights back to Bayalpata Hospital, which opened on June 21, 2009. With a staff of more than 30 Nepalese health care providers, the hospital tends to more than 3,000 patients per month.

Working with the local government

"How people live in Achham is fairly typical for rural and poor Nepal, but the isolation, the lack of transportation, and the lack of services set it apart," said Bibhav Acharya, M.D. '11, a resident in psychiatry at the University of California, San Francisco. Acharya, the executive vice president of Nyaya, is Nepalese but hails from the central part of the country.

Achham looks like a lot of other impoverished places around the world. Multiple generations of families live in mud homes. Agriculture is the only way to make a living, but a feudal social system means a handful of families control the debts, crops, and fates of most people in the region. Most of the population is illiterate and few have ever had access to regular health care.

When Andrews, Smith-Rohrberg Maru, and Basu approached Kaveh Khoshnood, M.P.H. '89, Ph.D. '95, assistant professor of epidemiology (microbial diseases), to be faculty advisor for their project in 2006, Khoshnood asked the same skeptical questions he asks of any students thinking of starting an NGO.

"Is there a need for this? Should somebody else be doing this? Can you really direct something there from here?" asked Khoshnood. "But they had considered [those things]. There was simply no other health care provider."

Khoshnood was surprised by how thoroughly the founding members of Nyaya had thought out their plans. Khoshnood said students often spew a lot of rhetoric about "long-term capacity building"—a buzz phrase that means whatever an NGO creates will endure long after its creators have moved on. Nyaya has figured out one counterintuitive way to make sure their NGO is sustainable: involve the government. "So many NGOs get frustrated by corruption and bureaucracy in governments, so they just bypass them," said Khoshnood. "But then, when the NGO leaves there's a vacuum of services."

Nyaya has secured government approval for every action taken in Achham, not always an easy feat given the region's isolation and political turmoil. Between 1996 and 2006 Maoist insurgents were fighting the government in a



LEFT Bibhav Acharya and Ryan Schwarz are currently in residency training and are both directors of Nyaya Health.

BELOW In Achham per capita income is less than \$1 per day and two of every three people are

illiterate. Because of gender inequality and the necessity for men to leave home to find work, the women of Achham are responsible for running households, raising children, and managing the farms. As a result, maintaining basic health needs becomes extremely difficult.



civil war that ended when the ruling monarchy tumbled. The new democratic government, however, hasn't been exactly eager to pour money into the region. Furthermore, foreign trekkers and climbers, the bulk of the country's tourist trade, ignore the lowland west in favor of the high peaks of eastern Nepal, home to Mount Everest. "Most money doesn't travel west," said Schwarz. "Tourism money stays in the east."

By involving the government in their plans, Nyaya has ensured that some government money will be planted in the hospital and that Nyaya will be accountable to the community it serves. The government funded the clinic's first health officer, and Nyaya takes pride in the government's regular—if

small—allowances for daily operations. Most of the more than \$500,000 Nyaya has raised since its founding—about 74 percent—comes from individual donors, with foundations providing another 19 percent.

"If we work with the government we can ensure that if we run out of money, they can step in," said Acharya. "If we collaborate, we help make the government responsible."

Getting the proper permits, proposals, and agreements was a headache for the founding members of Nyaya, but cooperating with a government is not nearly as difficult as confronting a society that places a greater value on health care for men than for women.



ROSHANI ANDREWS (3)

ABOVE LEFT Every day the Bayalpata Hospital outpatient department sees between 150 and 200 patients, along with many more in the emergency room and inpatient wards.

ABOVE RIGHT Amir Bista, medical director of Bayalpata Hospital, sees patients in the outpatient department.

RIGHT More than three quarters of the patients at Bayalpata Hospital walk more than three hours each way, and more than 20 percent walk more than 10 hours each way, crossing mountains and rivers, where no roads or other means of transport exist.

Yale medical and Yale College students, including Bibhav Acharya, M.D. '11; Jason Andrews, M.D. '07; Chhitij Bashyal, B.A. '10; Sanjay Basu, M.D. '09, PH.D. '09; Jen Garnett, M.P.H. '08; Jen Guo; Duncan Smith-Rohrberg Maru, M.D. '09, PH.D. '09; Ruma Rajbhandari; Ryan Schwarz M.D. '11, M.B.A. '11; and Aditya Sharma M.D. '07, have led the Nyaya team since 2006. Despite numerous challenges, they have succeeded in developing a health system that provides care to a region of hundreds of thousands of people.



"In this part of Nepal, there is a cultural stigma against blood," said Acharya. "It's thought of as unclean." That means that during menstruation and for 11 days after childbirth, women are isolated and made to sleep in cow sheds. And most families don't believe women's health is "worth" the expense.

While conducting a survey to gauge community health needs, Acharya encountered a very sick woman outside a small private medical practice near Achham. "She and her son came out of a clinic. I asked her what her symptoms were, she said she had had a fever for several weeks," said Acharya. "I asked her what kind of treatment she got. She said, 'What do you mean?'"

The woman wasn't there for herself—her son was showing signs of illness. Her husband, she said, had told her not to tell the doctor she was ill, too—they could afford medical care only for the male child.

Nyaya found a sustainable and double-pronged way to overcome the lack of health care for women: Nyaya health care is free, so there's no argument within families about who may get care. And the female patients trust their peers, the community health care workers (CHW), who are nearly all women. A CHW can have a nurse- or physician assistant-like role in the hospital, or act as a community educator. In most hospitals in Nepal CHWs are unpaid, but those who work for Nyaya make a decent living. Nyaya also supplements their government medical training with specialized programs. So far, the model has worked—65 percent of all patients seen at the hospital are women.

Product of a new generation

Nyaya's directors and founders are young, not unusual for an NGO, but remarkable for a successful one. In many ways, Nyaya is the product of a generational shift reflected in its founders, who value flexibility, transparency, and social connectedness, and see health as a global right.

Members of their generation have come to expect several job or career changes over a lifetime, a handful of homes, and maybe even more than one marriage. They also live their lives online, on social networks, and on mobile phones. With change and flexibility a cornerstone of their lives, Nyaya's founders were willing to allow the hospital to define itself in a way that serves the community. "We started out with the HIV focus," said Acharya. "But then we saw children dying of diarrhea and malnutrition, so we had to shift our focus. Our question is always, 'What's killing people?'"

Along with flexibility came transparency, which has set the organization apart in a sea of 32,000 NGOs in Nepal. "With so many NGOs, you have no idea of what actual work they do," said Khoshnood. "With Nyaya you can go to the blog daily and see that they had an immunization campaign, or that they painted a building on the hospital campus."

Nyaya is an open-source organization—every financial statement and every up-and-down confronting the organization can be found online, either on its blog or its wiki page.

"We don't keep things hidden as far as how we operate," said Andrews. "Any volunteer can read our financial model, our clinical model—it's all totally open. Being open has let more people come in." Khoshnood said donors are attracted to this transparency and the instant gratification of seeing their efforts on the Web.

The Web doesn't just make this transparency possible—it allows Nyaya to function. Such normal hospital functions as reviewing charts or offering advice on a mysterious case take place via the Internet or over a satellite phone service that is one of the hospital's highest monthly bills. Andrews oversees weekly mortality and morbidity meetings online, and because of the organizational structure of Nyaya (new presidents assume their roles every 18 months or so), constant e-mail is essential.

Familiarity with the Internet is only one element of a generational shift. Where do the motivation and inspiration to start such a project come from? That answer lies in an even larger question: why is the millennial generation so taken with global health?

As a professor of epidemiology, Khoshnood has seen an explosion in global health course offerings, student interest, and volunteerism in the last 10 years. He said that the HIV epidemic, the resulting activism, 9/11, and a realization that events around the world can have repercussions for the United States led this generation toward thinking of global health as both a vocation and a career. The Internet and mogul foundations like the Gates Foundation made having a career in such a field seem possible.

Schwarz came to Nyaya with a deeply held conviction, shared with other members, that health care is a fundamental human right. Everything flows from this uncomplicated belief.

Though Nyaya has been successful, the members say they're just starting to feel proud of their health care model, and it's nowhere near perfect. First, they need a surgical ward—too many women who make it to the hospital's maternity ward staffed with six full-time midwives die when a cesarean is needed. Second, since the organization is flexible, it's always looking for holes in its services. In that way, the hospital will never be perfect or complete.

Only when the members slow down and look up from the constant barrage of e-mails do they allow themselves to be a bit impressed with their work. They've turned an abandoned hospital in a small corner of the world into a house of healing and justice. **YM**

—Stephanie Soucheray is a freelance writer based in Durham, North Carolina.

To read more about Nyaya's work and find out how you can help, please visit www.nyayahealth.org.



Paul Cleary



Ruslan Medzhitov



Alanna Schepartz



Robert Sherwin

Public Health dean appointed to second term

PAUL D. CLEARY, PH.D., the Anna M.R. Lauder Professor of Public Health, was reappointed in June to a second five-year term as dean of the School of Public Health and chair of the Department of Epidemiology and Public Health. In his first term, applications for admission to the School of Public Health increased 30 percent. In September 2009, the new M.P.H. Global Health Concentration admitted its first cohort of students. The school's doctoral program also has been independently recognized by the National Research Council of the National Academy of Sciences as one of the finest in the nation.

Cleary has developed and expanded the school's public health service and practice activities. A sustainable model for community service has been created through the new Office of Community Health, which focuses on regional programs and activities aimed at improving the health of New Haven-area residents. In addition, the school has established the Community Alliance for Research and Engagement, a collaboration with the Yale Center for Clinical Investigation and the city of New Haven's municipal offices, school system, and community organizations.

The school has expanded its research portfolio under Cleary's direction, especially in cancer prevention. He has also strengthened the school's ongoing research on such global infectious diseases as HIV/AIDS, as well as research on related legal and policy issues. The school is also deeply involved in Yale's Global Health Initiative.

Shaw Prize awarded to immunobiologist

RUSLAN M. MEDZHITOV, PH.D., the David W. Wallace Professor of Immunobiology, a member of Yale Cancer Center, and a Howard Hughes Medical Institute investigator, is one of three scientists awarded the Shaw Prize in Life Science and Medicine for 2011. The Shaw Prize consists of three annual prizes: astronomy, life science and medicine, and mathematical sciences. Each carries an award of \$1 million.

Medzhitov shares this year's prize in life science and medicine with Jules A. Hoffmann, PH.D., professor at the University of Strasbourg, France; and Bruce A. Beutler, M.D., chair of the Department of Genetics at the Scripps Research Institute, La Jolla, Calif. The Shaw Prize Foundation honored them "for their discovery of the molecular mechanism of innate immunity, the first line of defense against pathogens."

Director named to West Campus institute

ALANNA SCHEPARTZ, PH.D., the Milton Harris '29 PH.D. Professor of Chemistry, has been named director of the Chemical Biology Institute on the West Campus. Schepartz was chair of the faculty advisory committee that met to define and develop the institute over the past year.

Schepartz will retain her position as professor in the Department of Chemistry and the Department of Molecular, Cellular and Developmental Biology and will split her time between the West Campus and Science Hill.

The institute will promote innovation at the intersections of different scientific disciplines—not only in chemistry and biology but also in engineering, physics, and medicine. Chemical biology involves both synthetic biology—the design and synthesis of new molecules to tackle problems that arise in biology and medicine—and the development of new reactions, materials, and processes inspired by those found in nature.

Schepartz came to Yale in 1988. Over the past 23 years, her lab has broken fresh ground in designing and developing new molecules as tools to monitor, manipulate, or mimic interactions between and among proteins in live cells. Her lab's work in developing the first synthetic protein was named one of 2007's "most important research advances" in chemistry by *Chemical & Engineering News*.

Diabetes researcher honored

ROBERT S. SHERWIN, M.D., the C.N.H. Long Professor of Medicine, chief of the Section of Endocrinology, and director of the Yale Center for Clinical Investigation and the Diabetes Endocrinology Research Center, received the American Diabetes Association's prestigious 2011 Albert Renold Award in June.

The Albert Renold Award is presented to an individual whose career is distinguished by outstanding achievements in the training of diabetes research scientists and facilitation of diabetes research. Sherwin has served as director of the training program in diabetes and metabolism at Yale for 26 years, where he has taught many diabetes researchers to design studies, collect and analyze data, and present the results.



Karen Anderson



Peter Cresswell



Jeffrey Gruen



James Brink



Eve Colson



Alan Dardik



William Jorgensen

even faculty members at the School of Medicine were among 5 of the state's leading experts in science, engineering, and technology elected to the Connecticut Academy of Science and Engineering in May.

The faculty members are: **Karen S. Anderson**, PH.D., professor of pharmacology; **Thomas O. Carpenter**, M.D., professor of pediatrics and of orthopaedics and rehabilitation; **Peter Cresswell**, PH.D., the Eugene Higgins Professor of Immunobiology and professor of cell biology and of dermatology; **Robert S. Galvin**, M.D., adjunct professor of medicine and health policy; **Jeffrey R. Gruen**, M.D., professor of pediatrics, genetics, and investigative medicine; **Charles J. Lockwood**, M.D., former chair, Department of Obstetrics, Gynecology and Reproductive Sciences; and **Ruslan M. Medzhitov**, PH.D., the David W. Wallace Professor of Immunobiology.

Ralph E. Hoffman, M.D., FW '80, professor of psychiatry; and **Flora M. Vaccarino**, M.D., HS '71, Harris Professor in the Child Study Center and professor of neurobiology, are among 15 researchers to share in \$1.5 million in NARSAD Distinguished Investigator Grants. Each grant, awarded by the Brain & Behavior Research Foundation, provides funding of up to \$100,000 for a one-year study of brain and behavior disorders.

James A. Brink, M.D., professor and chair of diagnostic radiology, was elected president of the American Roentgen Ray Society in June. The society is dedicated to the advancement of medicine through the science of radiology and its allied sciences.

Eve R. Colson, M.D. '89, associate professor of pediatrics, has been named a Macy Faculty Scholar by the Josiah Macy Jr. Foundation. The award provides \$100,000 in salary support for each of two years and is given to as many as five American faculty members in health professions education each year. The program aims to accelerate reforms in education for health professionals and to accommodate the dramatic changes occurring in health care.

Alan Dardik, M.D., PH.D., associate professor of surgery (vascular), has been appointed assistant editor of the *Journal of Vascular Surgery*, which provides vascular, cardiothoracic, and general surgeons with the most recent information in vascular surgery.

Myron Genel, M.D., professor emeritus of pediatrics, received the President's Certificate for Outstanding Service from the American Academy of Pediatrics in May. Genel was honored at the Pediatric Academic Societies' annual meeting in Denver. Genel ended his 27-year tenure as chair of the Public Policy Council, an advocacy voice of academic pediatric societies, in December 2010.

Akiko Iwasaki, PH.D., associate professor of immunobiology and of molecular, cellular, and developmental biology, was named a recipient of the 2012 Eli Lilly and Company Research Award in August. The award, given by the American Society for Microbiology, recognizes fundamental research of unusual merit in microbiology or immunology by an individual on the threshold of his or her career. Iwasaki's research

focuses on innate viral recognition mechanisms and their link to adaptive immunity.

William L. Jorgensen, PH.D., Sterling Professor of Chemistry, was among the 72 new members inducted into the National Academy of Sciences in May. Jorgensen, a co-founder of Rib-X Pharmaceuticals in New Haven, specializes in computational methods for drug design.

Megan C. King, PH.D., assistant professor of cell biology, is one of 15 researchers in the chemical and biological sciences named a 2011 Searle Scholar in April. Each scholar will receive \$300,000 to support their research over three years. King will use her award to pursue research in mechanical coupling of the cell nucleus and cytoplasm.

Jennifer M. McNiff, M.D., professor of dermatology, has received the Walter R. Nickel Award for Excellence in Teaching of Dermatopathology from the American Society of Dermatopathology. The award recognizes individuals who have made outstanding contributions in the teaching of dermatopathology.

Clarence T. Sasaki, M.D. '66, HS '73, the Charles W. Ohse Professor of Surgery and section chief of otolaryngology, has been named president-elect of the American Laryngological Association. Sasaki gave the Baker Lecture at the association's annual meeting in Chicago in April. Postdoctoral fellows **Mikhail Wadie**, M.D., and **Juan Li**, M.D., were jointly honored at this meeting with the American Broncho-Esophagological Association's Broyles-Malone Award.

M. Bruce Shields, M.D., chair emeritus and the Marvin L. Sears

Professor of Ophthalmology and Visual Science, was honored in June with an international ophthalmology symposium to mark his retirement. During his career, Shields centered his clinical practice, research, and teaching on glaucoma. Before coming to Yale, Shields served as a faculty member in the department of ophthalmology at Duke University; staff surgeon at the Durham (N.C.) Veterans Affairs Medical Center; and consultant at the Veterans Affairs Medical Center in Asheville, N.C. He directed Duke University's Glaucoma Service and developed glaucoma treatments involving the application of laser technology.

Brian R. Smith, M.D., chair and professor of laboratory medicine, has been selected to receive a 2011 Alternative Training Pathway Grant from the American Society of Hematology. Smith's grant will provide physicians specializing in internal medicine and pediatric hematology with clinically relevant training in transfusion and coagulation.

Eiji Yanagisawa, M.D., HS '59, clinical professor of otolaryngology, received a Presidential Citation at the annual meeting of the American Laryngological Association in Chicago on April 27. The citation recognized his efforts as president of several otolaryngology societies; an honorary member of otolaryngology societies of several countries; and a guest lecturer around the world.

SEND FACULTY NEWS TO
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to claire.bessinger@yale.edu

After five years, HAVEN clinic still thriving

A student-run free clinic on Saturday mornings provides health care to New Haven's uninsured.

The staff meeting starts at 8:30 on Saturday mornings. Thirty or more students in medicine, nursing, public health, the Physician Associate Program, and graduate and undergraduate programs—supervised by volunteer physicians, nurse-midwives, and physician associates—gather on the second floor of the Fair Haven Community Health Center to orchestrate a free clinic called HAVEN (HAVEN stands for health care, advocacy, volunteerism, education, and neighborhood.) over the next four hours. The session coordinator

for the day, Kate Standish, entering her second year as a medical student, assigns teams of senior clinical team members (nursing or third- or fourth-year medical students); junior clinical team members (first-year medical, physician associate, or nursing students); and interpreters (students fluent in Spanish) to work with attending physicians. Charts are distributed, bagels inhaled, and the teams descend to the first-floor exam rooms where they will provide care to uninsured and underserved patients in New Haven. About 90 percent of HAVEN's patient base are immigrants.

Since it opened five years ago, the clinic has seen hundreds of patients, filled countless prescriptions, referred patients to other health care providers in New Haven, and provided an opportunity for medical, nursing, and physician associate students to learn in a clinical setting. Six years ago students approached Nancy R. Angoff, M.P.H. '81, M.D. '90, HS '93, associate dean for student affairs, with the idea of launching a free clinic in one of New Haven's poorest neighborhoods. The students, though enthusiastic,

had little in the way of a business plan "I told them, 'You know a free clinic isn't free,'" said Angoff.

The students regrouped and presented Dean Robert J. Alpern, M.D., Ensign Professor of Medicine, with a prospectus that overcame his initial reservations. He agreed to provide a \$20,000 grant. In June, in his State of the School address on reunion weekend, Alpern called HAVEN "one of the great stories" of the School of Medicine.

The clinic also relies on the support of the Fair Haven Community Health Center, which provides the space on Saturday mornings. "Without them," Angoff said of the health center's staff and administrators, "it could not exist."

HAVEN's mission is hardly novel: trainees serving the poor and in the process learning at the bedside is a pillar of American medicine. But HAVEN is also the largest weekly lesson offered by the medical school in how to work in health care. By involving nursing, physician associate, and public health students, the clinic is a place where future doctors learn to collaborate with other health care professionals—a valuable skill as primary care increasingly falls to physician associates and nurses. And unlike those in many free clinics, students at HAVEN really do work. From running the social services referrals department to scheduling and providing



Medical student Leonard Edokpolo examined a patient at HAVEN, a student-run free clinic on a Saturday morning in June. HAVEN is based in the Fair Haven Community Health Center on Grand Avenue.

lifestyle counseling, student volunteers at HAVEN get a 360-degree window of access into a patient's life.

"Whatever it means to live with illness, one can't possibly understand that until one works with patients," said Angoff. "HAVEN is an opportunity right from the beginning to understand that."

Medical student Lauren Gruber spent a year as the inaugural John A. Jones—HAVEN Fellow, an honor that means she was responsible for organizing the clinic and performing community-based research. Gruber said HAVEN provides students with a chance to care for patients consistently through their time at the School of Medicine. "Because of the collaboration between different years and experience, we have first-years reteaching older students about the social contextualization of care," Gruber said.

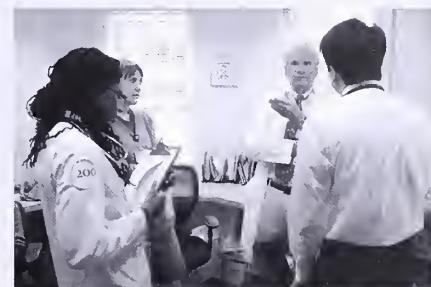
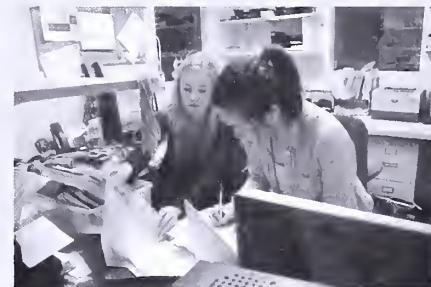
Contextualization of care is a big topic among HAVEN volunteers. HAVEN is rooted in understanding New Haven's immigrant population—what countries they come from, how they earn money, where they get (or don't get) their groceries. It's that holistic approach to care that appealed to Emily Thomas, a medical student who serves as the education co-director of HAVEN.

"These patients need additional education and support in order to be healthy," said Thomas. Thomas works with the patient lifestyle counseling program, ANDO ("I walk" in Spanish), which helps treat chronic disease with nutrition and exercise. On a Saturday in June, she found herself making soy smoothies, introducing a Zumba (dance-fitness) class, and counseling a woman who wanted an IUD. To steer more patients to ANDO, and such departments as social services and women's and men's groups, medical charts now carry a sticker that reminds team members to screen patients for food insecurity and daily habits. "For me medicine is not performed in a vacuum," said Thomas. "You have to understand the patient first."

After more than 250 Saturdays and 1,000 patient visits per year, the directors of HAVEN have learned that their clinic can't do everything. An in-house pharmacy was abandoned, and urgent care cases are now referred to Yale-New Haven Hospital or to Project Access, a program in which specialists donate free care. Most notably, HAVEN patients are now transferred to the regular Fair Haven clinic after one year. Standish said that HAVEN sees itself as a "portal to care," not a long-term solution for its patients.

But the clinic is a boon to students at the School of Medicine who are looking to explore a career in primary medicine or to apply the science and medicine that they learn in the classroom. "The first year of med school is focused on basic science and classroom learning. At HAVEN I go into the community and learn how to provide clinical care in the type of environment I want to work in," Standish said.

—Stephanie Soucheray



JOHN CURTIS (S)

TOP TO BOTTOM:

Clinic directors Julia Lubsen and Kate Standish met with student volunteers Jonathan Levin, Michael Ma, and Joseph Patterson before the clinic opens to patients.

Medical student Laura West and pharmacology student Michelle Mo track prescriptions and vaccinations and educate patients about their medications.

Robert Gifford, former deputy dean for education at the medical school, served as a preceptor and advised students on cases they presented to him.

Clinic directors Julia Lubsen and Kate Standish went over a roster of assignments.

A friendship endures from Yale to Harvard

After meeting as first-years, two doctors make history by becoming full professors at Harvard.

Valerie E. Stone, M.D. '84, M.P.H., and Tina Young Poussaint, M.D. '83, met at the School of Medicine in 1979, when they were moving into Harkness Dorm as first-year students. They became good friends, and despite cross-country moves and different medical specialties, they have remained close. When both landed in Boston—Stone at Massachusetts General Hospital (MGH), Poussaint initially at MGH and currently at Children's Hospital Boston—and on the faculty of Harvard Medical School (HMS), they began meeting monthly over dinner to catch up on their lives and careers. Recently their dinner was also a celebration—Stone, an infectious disease specialist and internist, and Poussaint, a neuroradiologist and expert in neuro-oncologic imaging, had just been named full professors, making them the first African-American women to hold this rank in their respective departments, medicine and radiology—and only the second and third African-American women to achieve this rank at HMS.

Though both women have CVs as thick as novels, becoming a full professor is often uncharted territory for even the most accomplished black women doctors. At a social gathering with fellow female African-American Harvard associate professors a few years ago, Stone recalled, the group knew of only one black woman who had been named a



professor at HMS—in the Department of Psychiatry—about two decades earlier. That professor had since left Harvard and the group wondered whether another black woman would ever be named a full professor there.

"We had just gone on so long without one, and history tends to predict history," said Stone, who is also the first African-American woman on Massachusetts General Hospital's staff to be named a full professor. "But I never thought that it was impossible for one of us to be promoted to full professor—challenging, but not impossible. I really felt that it was just a matter of time for the medical school, and a matter of reaching the required level of achievement for one (or more) of us."

Both Stone and Poussaint said the lack of other female African-American full professors reflects the scarcity of minorities in medicine. "There are very few minority women who become doctors," said Stone. "An even smaller percentage of those women go into academic medicine and many of those who start out in academic medicine don't 'stay the course' for a variety of reasons, including the difficulties of getting grant funding and the paucity of minority mentors."

Poussaint, who directs the Neuro-imaging Center for the Pediatric Brain

Tumor Consortium at Children's Hospital Boston and in 2010 co-authored the *Atlas of Pediatric Brain Tumors*, didn't let the fact that none of her career mentors or role models looked like her deter her from climbing the academic ladder. "If you persevere and are strong and determined, anything is possible in 2011," said Poussaint, the first female African-American professor at Children's Hospital Boston. "My hope is that academics in medicine will eventually better reflect the composition of this country."

In Stone and Poussaint's class at Yale there were three African-American women and seven African-American men out of 102 students. Poussaint, a graduate of a women's college, never felt marginalized as part of a minority group, noting that she was close to classmates of all races. "I went to Mount Holyoke College, so for me diversity also included men and women in the classroom together," she said.

There were times, however, during Poussaint's first year when administrative staff would call her by the names of the other black women in the class. "We three looked really different, so it was clear we were just not being looked at very closely as individual human beings," said Poussaint,

Tina Poussaint and Valerie Stone became fast friends at the School of Medicine. They are among the first African-American women to receive tenure at Harvard Medical School.

who is married to noted child psychiatrist and Harvard professor Alvin Poussaint, M.D. Together they have an 11-year-old daughter.

Stone has a stepdaughter, a senior at Georgetown University, with her long-term partner, a research scientist at HMS and the Beth Israel Deaconess Medical Center.

Stone said that she is one of a number of those in her generation of physicians who were moved to make a difference in a disease which was first described while she was in medical school: AIDS. "I was a third-year medical student when I first remember hearing about it," said Stone. "I was fascinated by the clinical manifestations of the disease and saddened by the way it was disproportionately affecting minorities and vulnerable populations." Now Stone is a leading expert on HIV/AIDS among minorities and women; in 2009 she co-authored a book titled *HIV/AIDS in U.S. Communities of Color*.

Both Stone and Poussaint said Yale's emphasis on lifelong learning prepared them for long careers in medicine. "The Yale system promotes a sense of responsibility," said Stone. "You keep up with the literature not because of an upcoming test but because you want to continue to grow as a physician."

—Stephanie Soucheray

How a passion for golf set a slacker on his life's course and to a president's bedside

Growing up in Cuba, Donald O'Kieffe, M.D. '64, says he was "headed nowhere fast," until a love of golf indirectly drove the future gastroenterologist to medical school and made him a key presence at ailing former President Dwight D. Eisenhower's bedside.

The son of a Minnesota banker and an Indiana homemaker and aspiring actress who once roomed with Ida Lupino, O'Kieffe was born in Hong Kong, where his father had been transferred by what was then Chase National Bank. When Japan attacked Pearl Harbor in 1941, O'Kieffe and his pregnant mother were evacuated to the United States, but Japanese forces held his father prisoner for another nine months.

Once freed through a prisoner-of-war exchange, O'Kieffe's father was assigned to Havana, Cuba, where O'Kieffe sank into the languor of the locale, studying sometimes and playing golf often. "I wasn't motivated. It was the heat, the tropical climate," O'Kieffe says.

Certain that O'Kieffe was on the wrong track, his father laid before him brochures from the most prestigious American boarding schools. He chose to attend the Taft School in Watertown, Conn., whose brochure had a photo of a golf course on the cover. "It straightened me out and propelled me into Yale."

During his years at Taft and later as an undergraduate at Yale College, O'Kieffe spent holidays in Havana—including New Year's Day 1959, when Fidel Castro took over the island. The New Year's Day fireworks turned out to be gunfire. "We were trapped down there. The port was closed, the airport was closed, and there was a lot of shooting."

When the U.S. Embassy arranged emergency evacuations for American students, O'Kieffe and throngs of other

students and parents met at the Hotel Nacional, where they caught a bus—with machine gunners behind sandbags on the roof—to the airport. With more passengers than seats, O'Kieffe sat in the aisle during the flight, cradling a canister of film a network reporter had asked him to bring to New York. In New York, after O'Kieffe handed over the film, a news producer whisked him and a classmate off to the television studio to be interviewed. Back in New Haven, a reporter from the *New Haven Register* asked for an interview despite O'Kieffe's protests that he'd be late for class. The next day the headline over his picture read "Yale Student Witnesses Cuban Revolution."

Life wasn't any less exciting after the flight from Cuba. O'Kieffe served as a staff physician at Walter Reed Army Medical Center during the Vietnam War. The highlight of his career was a rotation in 1968, when he kept daily eight-hour vigils at the bedside of former President Eisenhower, in critical condition after a second heart attack. "We were sitting just a few feet from him, and if it wasn't the middle of the night, we'd be talking to him. We could see the constant parade of dignitaries coming in while he was in the hospital."

As a golf lover, O'Kieffe was given a special task. Eisenhower never missed weekend golf on television, and the chief of cardiology asked O'Kieffe to determine whether watching golf was bad for Eisenhower's heart. O'Kieffe found that the former president's heart rhythm was irregular only when Arnold Palmer was playing. Palmer, who was Eisenhower's dear friend, had just quit smoking and had started

After a childhood in Hong Kong and Havana, Donald O'Kieffe came to the United States to complete his education and embarked on a path that would take him to a president's bedside.



CAROL CLAYTON

wearing eyeglasses, and his game was patchy. O'Kieffe recommended that Eisenhower not watch Palmer play, and that became the policy. Eisenhower must not have held a grudge—his typed thank-you letter hangs in a frame on O'Kieffe's office wall.

"Dear Captain O'Kieffe ... I want you to know of my gratitude for your interest and professional skill during many hours of extra duty following my last heart attack," the letter read.

Eisenhower was not O'Kieffe's last politician patient by far. Settling in D.C., O'Kieffe served as a medical consultant to the White House, the State Department, the National Institutes of Health, and the Peace Corps. In this role, he cared for Nancy Kissinger while she was hospitalized during Secretary of State Henry Kissinger's historic trip to China in 1971.

O'Kieffe performed the first colonoscopy in the D.C. area in 1972. Having trained at Walter Reed under H. Worth Boyce, M.D., a leading authority on the

emerging field of endoscopic photography, O'Kieffe had access to the only existing equipment for the procedure. When he began his practice in D.C., O'Kieffe performed colonoscopies through an agreement with the manufacturers before the scopes were made available commercially. "There was a great need. I wanted to start right then."

While patients and physicians rejected routine colonoscopy for the next 20 years, O'Kieffe became an ardent spokesperson for its benefits in lectures across the country and from his downtown practice on K Street—where he still treats a "parade of dignitaries"—including a Secretary of State, a former Secretary of Defense, members of the House and Senate, and many ambassadors—not unlike those who once visited Eisenhower.

—Sonya Collins

Familiar Faces

Do you have a colleague who is making a difference in medicine or has followed an unusual path since leaving Yale? We'd like to hear about alumni of the School of Medicine; Physician Associate Program; and the medical school's doctoral, fellowship, and residency programs. Drop us a line at ymm@yale.edu or write to Faces, Yale Medicine, 1 Church Street, Suite 300, New Haven, CT 06510.



Ralph Greco



Joseph Renda

Three Yale alumni are among the 72 new members inducted into the National Academy of Science in May in recognition of their distinguished and continuing achievements in original research. The alumni are:

ARTHUR L. BEAUDET, M.D. '67, the Henry and Emma Meyer Professor and chair of molecular and human genetics, Baylor College of Medicine.

BRIAN K. KOBILKA, M.D. '81, professor of molecular and cellular physiology and of medicine, Stanford University School of Medicine.

IRA S. MELLMAN, PH.D. '78, vice president of research oncology, Genentech, in South San Francisco, Calif.

1960s

Ralph S. Greco, M.D. '68, HS '73, the Johnson & Johnson Distinguished Professor and director of the general surgery residency program at the Stanford University School of Medicine, was chosen to receive the 2012 John C. Gienapp Distinguished Service Award from the Accreditation Council for Graduate Medical Education in March. Greco was honored for his nearly 40 years of work as a surgery program director, humanitarian, and innovator of a surgery curriculum focused on resident well-being and wellness.

Joseph L. Renda, M.D. '68, HS '74 associate clinical professor of medicine, was given the Community Achievement Award by the National Kidney Foundation in February 2011. In addition, he received the George F. Thornton Teaching Award in November, given by the Connecticut Chapter of the American College of Physicians. Renda is the senior



Richard Boland

Mark Gold

Richard Low

Robert Posteraro

Richard Wohns

Paul Di Capua and Deborah Lehman

Paul Rolston

partner of Associated Specialists in Nephrology and Hypertension in Waterbury, Conn.

1970s

C. Richard Boland, M.D. '73, became president of the American Gastroenterological Association on May 9. Boland also received the Gastrointestinal Oncology Section Research Mentor Award in May. He notes that he is still working on colon cancer, the subject of his Yale thesis.

Mark S. Gold, M.D., HS '78, the Donald R. Dizney Eminent Scholar, Distinguished Professor and chair of psychiatry at the University of Florida (UF), has been named by the university and the UF Alumni Association the 17th Distinguished Alumni Professor for 2011 to 2013. Gold has worked for nearly 40 years to develop models for understanding the effects of tobacco, cocaine, and other drugs on the brain and behavior.

Jesse B. Jupiter, M.D. '72, Hansjörg Wyss AO Professor of Orthopaedic Surgery at Harvard Medical School and Massachusetts General Hospital, has been named an honorary member of the Royal College of Orthopaedic Surgeons in Thailand. He gave the IFSSH Eponymous Swanson Lecture at the International Federation of Societies for Surgery of the Hand in October 2010. He also delivered the Edward Nalebuff Visiting Lecture at the New England Baptist Hospital during the past year and will receive a lifetime achievement award from the National Arthritis Foundation.

Richard Low, M.D. '76, has been chosen as the new president of

the Yale Club of Argentina. Low has been an active member in Yale Club of Argentina activities. He is the founder and CEO of Praxis EMR, a binational company with offices in California and Buenos Aires that produces electronic medical records software.

Robert H. Posteraro, M.D. '73, was inducted as a fellow in the American College of Radiology during its 88th annual meeting and chapter leadership conference in May in Washington, D.C. Posteraro is an assistant professor at Texas Tech University Health Sciences Center School of Allied Health Sciences.

Richard N.W. Wohns, M.D. '77, M.B.A., J.D., was listed as one of the top 100 spine surgeons in the United States by the 2010 *Becker's Hospital Review*. He also graduated from the Seattle University School of Law in May. Wohns is the founder and president of South Sound Neurosurgery in Puyallup, Wash.

1980s

Michael A. Rothschild, M.D. '88, and Alison Gail Max were married in June in New York. Rothschild is a pediatric otolaryngologist in private practice in New York, a clinical professor of otolaryngology and pediatrics at the Mount Sinai School of Medicine, and the director of pediatric otolaryngology at Mount Sinai Medical Center. The bride is a co-director of the lower school of the Calhoun School in Manhattan.

1990s

David L.S. Morales, M.D. '95, a pediatric cardiovascular surgeon at Texas Children's Hospital

Heart Center, performed the first implantation in the United States of an artificial heart into the chest of an 18-year-old patient. The operation took place on May 22 at Texas Children's Hospital in Houston. The patient was born with his heart on the wrong side of his chest and his heart vessels backwards. The artificial heart will serve as a bridge to transplantation of a donated heart.

2000s

Paul D. Di Capua, M.D. '09, M.B.A. '09, and Deborah Kathryn Lehman were married on July 3 in Palm Beach, Fla. Di Capua is a third-year internal medicine resident at Ronald Reagan UCLA Medical Center in Los Angeles. Lehman is a student in the doctoral program in architecture at UCLA.

Barbara Latunik Esders, M.M.Sc. '03, PA-C, and her husband, Theodore Esders, became the parents of twin girls, Leah Katherine and Emily Mary, on May 13, 2010. The twins join big sisters Ella and Sophie. Esders is a physician assistant at Rochester General Hospital in New York.

Robert McGlynn, M.D. '06, and Sarah Burge were married on February 5 in New Haven. McGlynn completed an ophthalmology residency at the New York Eye and Ear Infirmary in New York City last year. He is now a fellow at the University of Illinois at Chicago. Sarah McGlynn is the preservation librarian for the Cushing/Whitney Medical Library.

Paul Rolston, M.M.Sc. '02, PA-C, is a captain in the United States Army. He recently returned

from a 15-month deployment in Iraq, where he served with an infantry company at a combat outpost. He worked with coalition forces teaching Iraqi physicians and developing local national medical assets. While doing so he continued to be the sole line medical provider for infantry soldiers engaged in combat operations in Abu Ghraib, Nasir Wa Salam, Sadr City, and in and around Baghdad. He is now serving the Army as the battalion surgeon for the Airborne Rangers at the 6th Ranger Training Battalion, Eglin AFB, Valparaiso, Fla.

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HEALTH SCHOOLS TO PRODUCE ALUMNI DIRECTORY

Yale's health professional schools have contracted with Harris Connect, the largest alumni publication company in America, to update contact information for all alumni. Harris will also help produce a hardcover directory of alumni. The "Alumni Today" publication will include a section for photos and memories from your days at Yale. Alumni will be contacted to verify and update contact and career information.

YOUR PRIVACY IS IMPORTANT

Yale University values your privacy and treats your information in a secure manner. You decide whether or not your personal information is published—make your wishes clear to the representative with whom you speak.

C. Davenport Cook, M.D., the fourth chair of the Department of Pediatrics who oversaw the expansion of subspecialty services, died in Old Lyme, Conn., on September 4. He was 91. During his 10-year tenure, Cook, a ninth-generation physician, recruited faculty and oversaw the opening of the nation's first modern neonatal intensive care unit at Yale. His commitment to underserved populations led him to become a founder of the Hill Health Center and to work as a physician in the New Haven public schools.

Gregory E. Gardiner, Ph.D., died on September 7 at his home in Stonington, Conn. He was 67. Gardiner was the former managing director of Yale's Office of Cooperative Research, where he was responsible for development of technology and licensing of intellectual property created by Yale faculty. He devoted more than 30 years of industry, consulting, and investment experience to the Healthcare Group of CMM. He was also a partner in Elm Street Ventures, which specialized in the life sciences. He served as a director of five biotech companies as well as a consultant and advisor to several investment funds and pharmaceutical and biotech companies.

John A. Kirchner, M.D., a world-renowned physician-scientist who served as chief of the Section of Otolaryngology at Yale School of Medicine for 30 years, died on July 31 at Yale-New Haven Hospital after a brief illness. He was 96. Kirchner was a skilled surgeon and prolific researcher, with expertise in the anatomy, physiology, and pathology of the larynx and pharynx, and in the surgical treatment of laryngeal cancers.

Frank F. Richards, M.D., a professor emeritus of medicine (tropical) who served on the Yale faculty from 1968 until 2001, died on June 13 at Connecticut Hospice in Branford. He was

82. Richards co-founded and directed the MacArthur Center for Molecular Parasitology and Tropical Diseases at Yale and was a co-founder and associate director of the Morgan-Tan Centers of Biological and Medical Research at Fudan University in Shanghai.

Herbert S. Sacks, M.D., HS '53, died on August 30 in New Haven. He was 84. Sacks was a renowned clinical professor of child and adolescent psychiatry at the School of Medicine, as well as an international medical consultant who worked with the U.S. Peace Corps and the Agency for International Development. He was a founding member of the Committee on International Health, which has awarded international student travel grants to Yale medical, nursing, and physician associate students for more than 40 years.

Sacks' international work focused on the psychological impact of population dislocation caused by natural disasters and water development projects. He was an early advocate for the integration of traditional healing practices into structured public health programs in conjunction with village leaders and traditional healers. As president of the Connecticut Psychiatric Association, Sacks led a successful campaign to mandate group insurance coverage for outpatient psychiatric treatment—the first such state legislation in the country. In 1997, as president of the American Psychiatric Association, he spearheaded a national initiative for mental health parity in insurance coverage as part of a policy of universal access to mental health care.

Robert L. Scheig, M.D., '56, HS '61, FW '62, professor emeritus of medicine at the State University of New York at Buffalo, died on April 8 at Hospice Buffalo. He was 80. After holding various appointments at Yale, Scheig was appointed professor of medicine at the University of Connecticut School of Medicine in 1973 and was its acting head of medicine

until 1979. In 1981 he became head of the department of medicine at Buffalo General Hospital and professor of medicine at the University of Buffalo.

We have also received word of the passing of the following alumni and faculty:

Michael D. Albis, M.D., HS '50, a pediatrician in Hamden for many years, died on July 19 in Farmington Hills, Mich. He was 86.

Carole L. Berger, Ph.D., research scientist in the Department of Dermatology, passed away from a rapidly progressive malignancy on July 25. She was 66.

Thomas J. Coleman, M.D., '46, an orthopaedic surgeon, died on July 1 in Arcadia, Calif. He was 89.

Charles J. Corbin, PA-C, '74, died on December 24, 2009. He was 73.

Lawrence G. Crowley, M.D., '44, HS '51, died on March 30 in Cupertino, Calif. He was 91. A surgeon, Crowley was the dean of the University of Wisconsin Medical School and dean and vice president for medical affairs at Stanford University after 1977.

M. Michael Eisenberg, M.D., HS '62, died in New York City on February 24. He was 80 and had been a professor of surgery at Weill Cornell Medical Center.

Joseph I. Epstein, M.D., '43, of Portland, Conn., died at home on May 29. A general practitioner and allergist, he was 92.

John H. Hageman, M.D., '62, HS '68, a vascular surgeon, died on March 30 in Toledo, Ohio. He was 76.

Paul J. Jakubiak, M.D., HS '66, a neurosurgeon in Williamston, Mich., died at home on April 11. He was 74.

John J. Jasaitis, M.D., '59, died on June 11 in Neptune, N.J. Until his retirement in 2009, he was a general surgeon in Manhattan.

A veteran of the Vietnam War, he was 77.

Joseph F. Kell Jr., M.D., '43, a retired neurosurgeon, died on March 15, 2010, in Richmond, Va. He was 92.

John B. LeRoy, M.D., '50, who did early research on human DNA, died on April 22 in Eastham, Mass. He was 87.

Roland D. Paegle, M.D., '61, a professor of pathology, died on April 6 in Tierra Verde, Fla. He was 74.

Boris G. Rifkin, M.D., formerly an associate clinical professor of psychiatry, died in Naples, Fla., on April 18 after a long illness. He was 80. Born in Cape Town, South Africa, he practiced psychiatry in New Haven and served as acting chair of the Department of Psychiatry at the Hospital of Saint Raphael in New Haven.

Michael H. Sheard, M.D., FW '65, professor emeritus of psychiatry, died on June 15. He was 83.

William L. Shepard, M.D., '53, a retired internist, died on June 26 in San Luis Obispo, Calif. He was 83.

Elihu S. Wing Jr., M.D., '46, died on April 10 in Providence, R.I., where for many years he was in private practice and led medical missions to Haiti. He was 89.

James W. Wood, M.D., HS '67, who for many years was in a gastroenterology practice in Greenwich, Conn., died on April 24 in Pittsford, Vt. He was 76.

SEND OBITUARY NOTICES TO
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Auction benefits the hungry and homeless

The 19th Annual Hunger and Homelessness Auction, sponsored by Yale Health Professional Schools, raised more than \$30,000 in November. Among the items offered were a faculty vs. students softball game, flights on faculty airplanes, and cruises on faculty yachts, a Capoeira lesson, and, of course, anatomy professor Bill Stewart's bow tie. Proceeds benefit New Haven charities.

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winter 2012

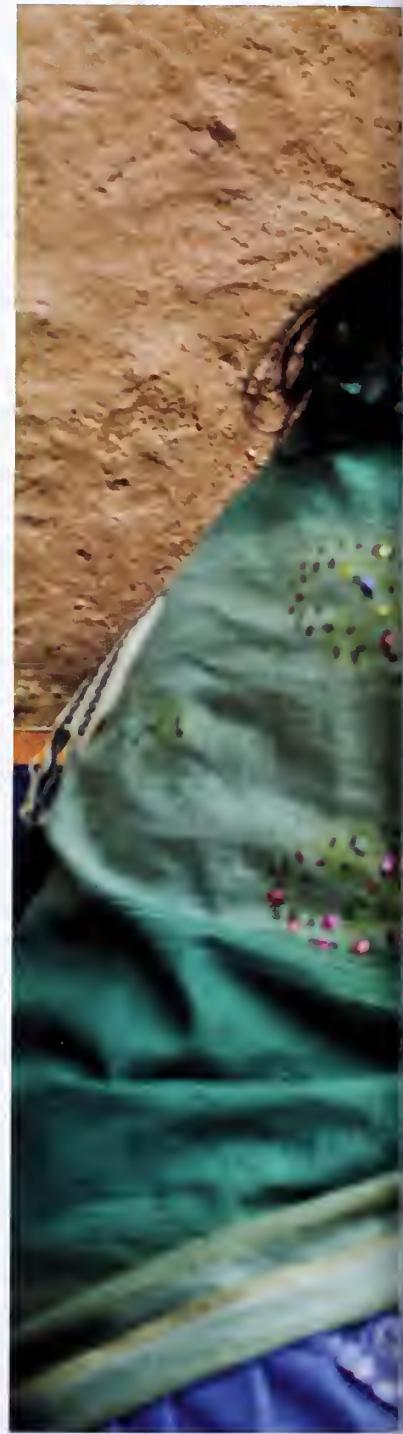
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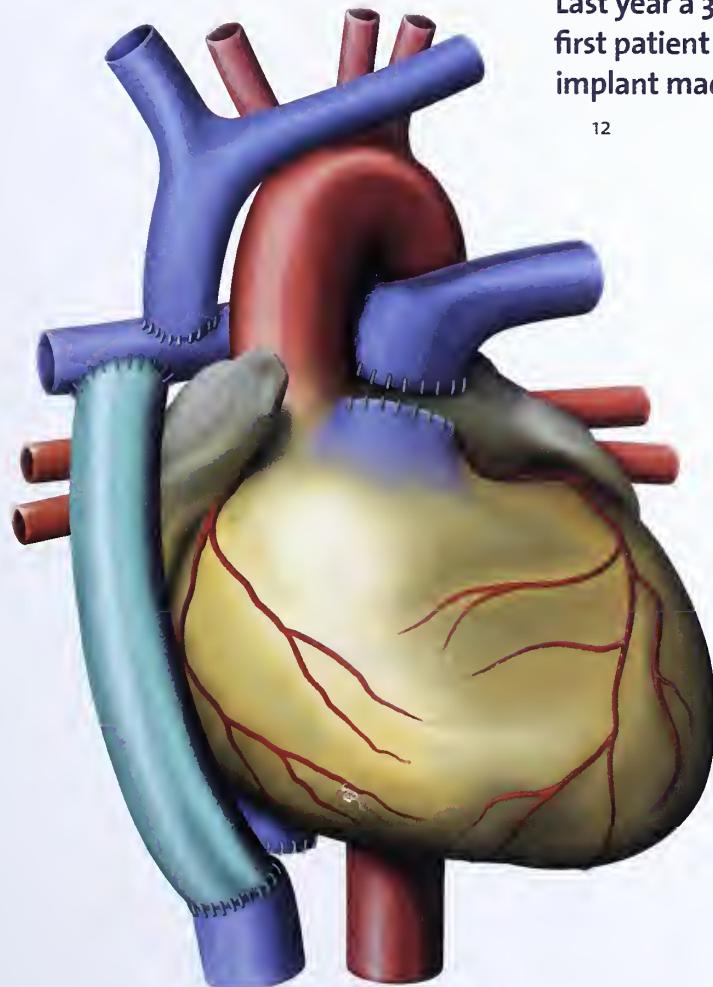
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spring 2012

Tissue from the lab mends a broken heart

Last year a 3-year-old Bridgeport girl became the first patient in the United States to receive an implant made of bioengineered tissue.

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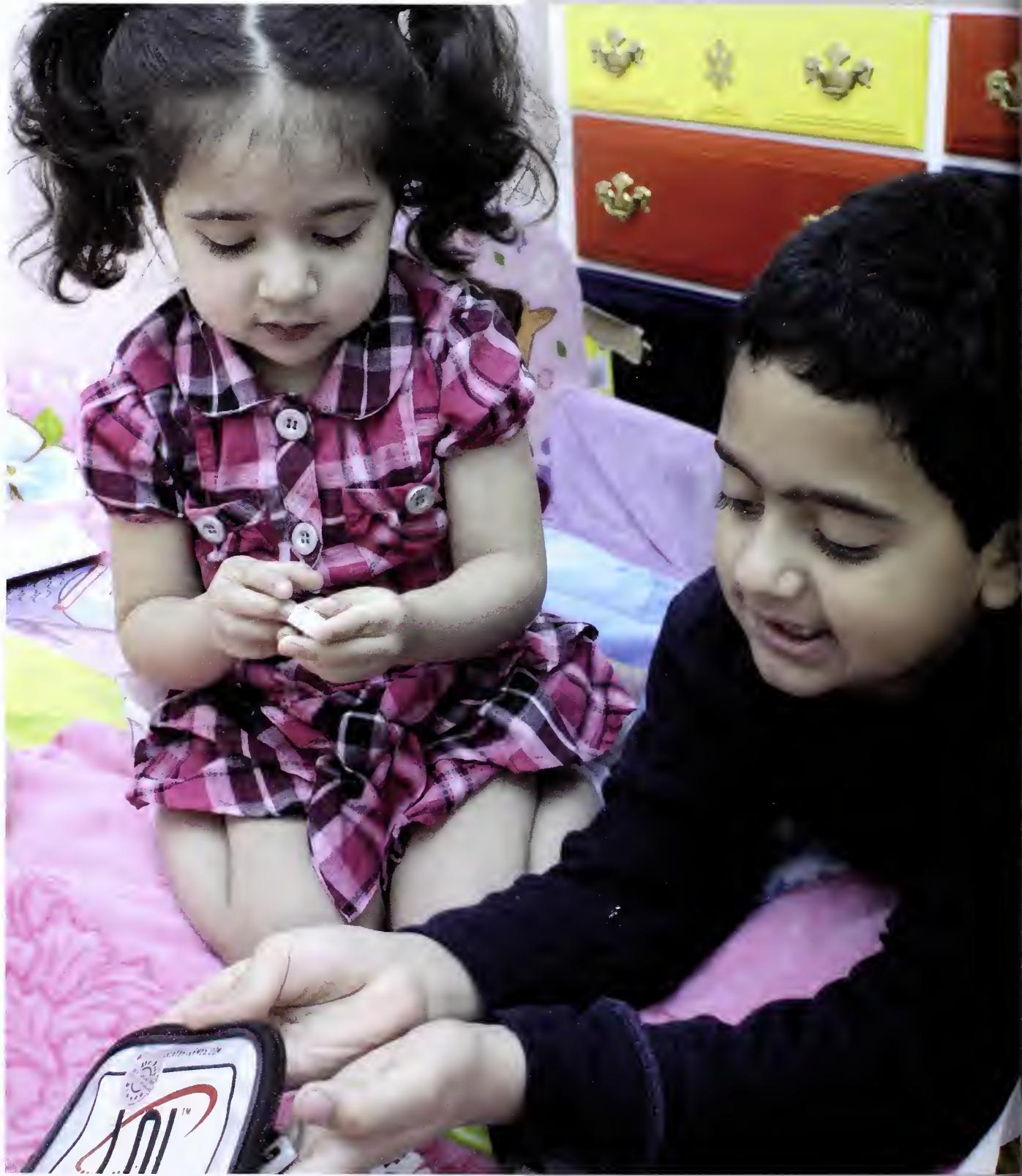
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ON THE COVER Using a bioengineered graft made with cells from her own bone marrow, Yale surgeons rearranged blood flow in the heart of a girl born with only one functioning ventricle.

Illustration by Steven Hall

THIS PAGE Angela Irizarry played in her bedroom with her brother, Alexander. Last year she became the first patient in the United States to receive a bioengineered heart vessel.

Photo by John Curtis



SPRING 2012

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On physician-scientists

Congratulations to Colleen Shaddox for a very interesting and timely article in the Autumn 2011 edition [“Is the physician-scientist an endangered species?”]. I published an article in *Yale Medicine: Alumni Bulletin of the School of Medicine* in the spring of 1972, titled “Sickleemia: The Doctor Bird Visits a Political Arena.” As a student advocate I helped to form the Sickle Cell Committee of South Central Connecticut between the community of New Haven and the School of Medicine. Then I graduated from the School of Medicine in 1973 and have been practicing internal medicine ever since. I’m proud to have left a contribution to the community. It’s important to be able to think outside the box if physicians are to contribute to science or their local communities.

*Robert E. Galloway, M.D. ’73,
M.P.H., M.B.A.
Houston, Texas*

Concern is expressed in the Autumn 2011 issue about the future of the physician-scientist. Clearly the benefits that medical research has bestowed upon humanity are remarkable, thanks to the efforts and perseverance of research physicians’ inquisitiveness and their relentless pursuit of answers. But do medical researchers necessarily have to be M.D./Ph.D.s?

Almost 100 years ago, Sir William Osler, a respected clinician, author of a widely read medical textbook, and one of the founders of the Johns Hopkins University School of Medicine, believed that medical researchers should confine their labors to research institutes and that physicians should be trained by community-based physicians in private practice. He thought that the separation would be beneficial because it would lead to the training of more practical-minded physicians. Osler also believed that

physicians living in the community would bring a practical and humanistic viewpoint to the medical wards that research scientists who are focused on the purely scientific components of illness are incapable of.

But Abraham Flexner—who was an educator, not a physician—held the contrary position. He believed that physician-scientists should be trained in the university and that full-time professors of medicine should train physicians. With the backing of the Carnegie Foundation and the Rockefeller Foundation, Flexner prevailed. The orientation of American medicine has been research-based ever since. Some believe that the lack of primary care physicians is partly due to the disproportionate attention to medical research compared to primary care. The effects of Flexner’s influence on medical education are now being questioned by some medical educators.

The point is that medical research is absolutely necessary for medicine to advance. How much research and what kind, however, are questions that need to be addressed. Osler’s idea of separating physician-clinicians and physician-scientists, as heretical as it may sound today, may have merit. Perhaps fewer M.D./Ph.D.s will not have a generally negative effect on medical progress. Maybe more Ph.D.s working in research institutes and collaborating with physician-clinicians is a model that should be studied.

It would lessen the focus on medical research and place more emphasis on the training of primary care physicians. Is that necessarily a bad thing?

*Edward J. Volpintesta, M.D.
Bethel, Conn.*

In “Is the physician-scientist an endangered species?,” Colleen Shaddox outlines the School of Medicine’s noble efforts to encourage young people to become the medical researchers of the future. The major threat to the developing physician who undertakes basic science research is that this species is a financial liability in most academic departments.

When faculty members are told by their chairs that they must “cover their salary,” they encounter a conflict. On the one hand, a physician-scientist typically needs two NIH R01 grants to pay a significant portion of salary and cover the expenses of doing research. And it is hard to see how one could successfully run such a lab without at least 90 percent effort. To cover the remainder of his or her salary typically means generating income through clinical work. When one considers the costs of seeing patients (malpractice, room rental, administrative support, etc.), however, the break-even time point is typically about 40 percent effort. In the current academic department business model, there simply is not enough time to be an effective basic science researcher and see enough patients to cover the remaining salary costs. The exception to this situation occurs in wealthy departments—either surgical departments or those with profit-generating procedures. To the extent that departments must keep their financial house in order, there is a major disincentive to carry physicians who undertake basic science research. Departments and medical schools must find intrinsic merit in physician-scientist faculty members and support them accordingly, or the physician-scientist will go the way of the dodo bird.

*Robert G. Kalb, M.D., HS ’87, FW ’90
Professor, Neurology
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Yale Medicine goes viral

As one who came of age professionally in the era of print and attended a high school that kept academic records on punch cards churned out by an off-site computer as big as a warehouse, I'm still amazed by the possibilities of the digital age. Two e-mail messages that arrived on the morning of January 30 reminded me of the increasing power of social media.

Debby Jagielow, director of alumni affairs for the medical school, wrote to say that our Winter 2012 cover story about Yale medical students who had launched Nyaya, a clinic in a remote corner of Nepal, was receiving many, many "likes" on Facebook.

The next message came from Pete Farley, managing editor of our sister publication, *Medicine@Yale*. On January 29, a *New York Times* columnist, Nicholas Kristof, and Peter Singer, the Ira W. DeCamp Professor of Bioethics at Princeton, had tweeted the article by freelancer Stephanie Soucheray-Grell. "Great piece on Yale med students who started a new style of NGO, saving lives in one of the poorest regions of Nepal," Singer tweeted.

That same day Facebook and Twitter drove 1,050 viewers to our site. Our website usually draws about 900 visitors per month.

Is there a lesson here? I like to think that this surge in Web traffic resulted from a series of fortunate events. We had a compelling story about a new approach to providing health care in the developing world—the story struck a chord with two well-known people who speak out on behalf of the marginalized and forgotten. The most gratifying news, however, came from Nyaya's founders, who said that *Yale Medicine* has helped put their project in the public eye, and that in turn will help them to fulfill their mission of saving lives in Nepal.

It was also gratifying to learn in January that an article in our Spring 2011 issue, "The High Cost of a Medical Education," by freelance writer Sonya Collins, had won an Honorable Mention award from the Association of American Medical Colleges' Group on Institutional Advancement.

John Curtis
Editor

SECOND OPINION BY SIDNEY HARRIS



"YOU MEAN I'VE BEEN TAKING THE PLACEBO?"

yale medicine

*Alumni Bulletin of the
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Spring 2012, Volume 46, No. 3*

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New center to support novel teaching methods

Its goal is to enhance the learning experience for students and elevate the status of teaching.

A new center opened in February in a handful of rooms on the second floor of Harkness Building A. The Teaching and Learning Center was created to address two issues at the heart of the School of Medicine's effort to review its medical curriculum and bring it in line with the practice of medicine in the 21st century. One issue is the place of new educational technology; the

other is the long-standing tendency in academic medicine to reward research and clinical care over teaching.

"We want to enhance the learning experience for our students and elevate the status of teaching by putting in place the kind of support and expertise our faculty can use to develop new teaching methods," said Richard Belitsky, M.D., deputy dean for education and the Harold W. Jockers Associate Professor of Medical Education, who is developing and overseeing the center.

The center is a direct result of the School's Strategic Plan for Medical Education. A planning committee report issued in 2010 was unambiguous in determining that teaching should be a top priority. "The need to better recognize, support, and reward teachers and educators has emerged as a central theme and clear recommendation of this strategic planning process, just as it had in each of the four prior strategic planning efforts," the report stated.



Haeseler says he views his new role, which Belitsky describes as “marrying technology and pedagogy,” as an outgrowth of his work as director of the Standardized Patient Program and as founder and director of the Primary Care Clerkship. Haeseler expects that the strategic plan will inspire the integration of a variety of pedagogies into the medical school’s new curriculum. The TLC could help facilitate this process by adapting such innovative technologies as electronic medical records, cloud computing, handheld devices, asynchronous learning, distance learning, and low- and high-fidelity simulation. Haeseler also brings to the TLC a team of seasoned standardized patients, who participate in a variety of teaching venues throughout the first three years of the medical school curriculum. He expects that the standardized patient program, with its many illness scenarios and its emphasis on patient-centered communication, will continue to evolve to meet the needs of faculty and students in achieving the school’s overarching goals.

Still, with all the focus on new technologies, new pedagogies, and new ways of teaching and learning, Belitsky wants to make sure the old ways aren’t abandoned. He says he’ll be watching closely to make sure that whatever is introduced is “consistent with the Yale system and the learning environment we all cherish.”

—Jennifer Kaylin

The Teaching and Learning Center (TLC) has a conference room, offices, and computers. It will offer programs, seminars, services, training, and consultation in three areas: educator development, assessment, and technology. The center will provide help with assessment methodology and interpretation of evaluation data in student learning, curriculum effectiveness, and quality of teaching.

Belitsky sees the TLC as an important step toward “fulfilling the promise of the strategic plan.” To be leaders in medical education, he said, “we need to think carefully about the learning strategies of our students. They are highly influenced by new technologies, so we need to make sure our faculty is facile with them, too.” One example is the school’s recent decision to give iPads to all students. The electronic tablets enable students to download the entire curriculum and will be used increasingly by professors as a teaching tool to engage students in new ways.

The center will have four associate directors. Janet P. Hafler, M.Ed., Ed.D., will serve as the associate director for educator development; Frederick D. Haeseler, M.D., FW ’76, is the associate director of learning and technology; and Gary B. Leydon will be the associate director for technology services. A national search for an associate director for learning and assessment is under way.

Gary Leydon, Rick Haeseler, Janet Hafler, and Richard Belitsky lead the new Teaching and Learning Center, which opened in February. The center’s goals are to enhance students’ learning experience and recognize excellence in teaching.

YSM, PHARMA TO COLLABORATE

Yale and the Johnson & Johnson Corporate Office of Science & Technology (COSAT) have signed an agreement to fund activities at the Yale Small Molecule Discovery Center (YSMDC). The YSMDC helps validate potential biological targets for new drugs and molecules.

“This sponsorship of the YSMDC comes at a time when academic and pharmaceutical scientists are increasingly looking to collaborate in order to help fill the pharmaceutical pipeline with the medicines of tomorrow,” said Thomas E. Shrader, Ph.D. ’90, director of strategic corporate partnerships in Yale’s Office of Cooperative Research.

“This collaboration will allow Yale scientists to focus on the parts of this pathway that we do best—identifying novel disease targets, while getting COSAT’s expertise in the areas where Yale, and most universities, have limited experience,” said Michael S. Kinch, Ph.D., managing director of the YSMDC.

—John Curtis

WHEN YOU GOTTA GO

A strong need to urinate impairs cognitive faculties as much as fatigue or an alcohol buzz, according to researchers at Yale, Brown, the University of Melbourne, and the Australian company CogState.

“Giving people lots of water and making them take tests while squirming in discomfort may seem a bit quirky, but the research helps us evaluate the methods used to measure cognitive change,” said Robert H. Pietrzak, M.P.H., Ph.D., assistant professor of psychiatry at the School of Medicine. The research garnered the 2011 Ig Nobel Prize in Medicine from the humor magazine *Annals of Improbable Research*.

For the study, published in January 2011 in *Neurourology and Urodynamics*, healthy adults drank 250 milliliters of water every 15 minutes and took cognitive function tests every hour. The resulting impairment in attention and working memory matched that observed in people who have a 0.05 percent blood alcohol concentration or have remained awake for 24 hours. The subjects’ cognitive functions “returned to normal almost immediately after voiding.”

—J.C.

Gene therapy takes a step forward with a synthetic nanoparticle

The particles injected into the tail of a lab mouse course through the animal's veins, eluding immune surveillance as they make a stealth run toward the tiny tumor growing on its flank. When the particles hit the tumor, the raid begins in earnest. The particles slip through the outer cellular membranes and into the rogue cells. The genes packaged within the particles shed their protective polymer veil and hijack the cellular machinery. From there, the covert DNA instructs the cells to produce apoptosis-inducing proteins, which trigger cell suicide and ultimately sabotage tumor growth.

This gene therapy success story, published online in December in the journal *Nature Materials*, marks a paradigm shift in the method for delivering therapeutic genes to diseased cells. At the root of this triumph is a biodegradable nanoparticle created by Yale biomedical engineers that upends previous dogma.

As W. Mark Saltzman, Ph.D., the Goizueta Foundation Professor of Biomedical Engineering, co-principal investigator with associate research scientist Jiangbing Zhou, Ph.D., and research scientist Zhaozhong Jiang, Ph.D., explains it, researchers previously used viruses to ferry genetic material into animal cells. These foreign particles, however, appeared as red flags to the host's immune system, resulting in their swift demise. Earlier engineers replaced the viral vectors with synthetic nanoparticles, which they believed needed a high positive charge to glom onto negatively charged DNA and condense it into a neat little package for intracellular delivery. These charged nanoparticles did the job, but their excess positive charge also destabilized cell membranes, causing considerable toxicity.

The Yale researchers hypothesized that replacing some of the excess

Biomedical engineer Mark Saltzman, pictured with medical student Maya Kotas (left) and graduate student Margaret Cartiera, has developed a nanoparticle to deliver gene therapy. The particle has proven successful in vitro and in mouse models in introducing genes that thwart tumor cells while avoiding toxicity.



positive charge with hydrophobic regions might reduce the toxicity of the polymers yet still allow for condensation of DNA. They developed a controlled system of polymer synthesis that allows them to tune the polymer constituents, tweaking where necessary to find the right balance between positively charged and water-insoluble units.

Among the 20 polymers that the Yale team constructed, one exhibits the ideal mix of sticky positive charges and hydrophobic regions. When mixed with DNA, the polymer condenses to create nanoscale spheres that resemble minuscule water droplets on a pane of glass. The compacted DNA tucked within the nooks and crannies of the polymer blobs is protected from enzymatic assault when circulating in the body. Equally important, the nanoparticles pose no harm to the animal host.

When tested in vitro, the nanoparticles delivered genes to target cells with 50- to 170-fold-greater efficiency than commercially available gene therapy

vectors. Furthermore, tumor-bearing mice regularly dosed with the apoptosis-inducing gene therapy showed no toxicity during the entire course of treatment, and their tumors grew to only a fraction of the size of those in control mice. Closer inspection of the tumor tissue revealed that the suicide gene dramatically promoted the death of tumor cells.

Saltzman envisions someday using the new polymer delivery system in humans to enable gene therapy for several diseases, including cystic fibrosis, Huntington disease, and cancer, particularly brain tumors—a devastating disease that he says demands heroic efforts. "We've been developing techniques for introducing particles like these directly into the brain to treat malignant brain tumors for some years. Our hope is that these polymers give us another tool—a very safe tool—that we can use in that arena," Saltzman says.

—Kara Nyberg

Grant funds study of rare disorders linked to single mutant genes

While some diseases stem from a web of influences including environment, lifestyle choices, and genetic luck, others result from a single mutant gene. While the inheritance patterns of these so-called Mendelian disorders are straightforward, finding the errant genes is not.

More than 6,000 rare Mendelian disorders have been identified in the United States. Collectively, they afflict more than 25 million people, but each affects fewer than 200,000 people. The fewer patients who have a disease, the harder it is to study, because both funding and genetic samples are limited—yet discerning their genetic causes may lead to treatments and yield broader insights into human biology.

"There are roughly 22,000 genes in the human genome," said Richard P. Lifton, M.D., Ph.D., chair and Sterling Professor of Genetics and a principal investigator of a new grant from the National Institutes of Health. "Right now we know what diseases result when about 3,000 of those are mutated. We know almost nothing about what happens when the remaining ones are mutated."

The new four-year \$11.2 million grant has established the Yale Center for Mendelian Genomics, to be located on the West Campus. The grant, announced in December, will fund two other centers devoted to Mendelian diseases—one at the University of Washington in Seattle and one operated jointly by Baylor College of Medicine in Houston and the Johns Hopkins University in Baltimore.

At Yale, principal investigators include Murat Günel, M.D., HS '98, the Nixdorff-German Professor of Neurosurgery and professor of genetics and of neurobiology; Shrikant Mane, Ph.D., senior research scientist in genetics; and Mark B. Gerstein, Ph.D., the Albert L. Williams Professor of Biomedical Informatics and

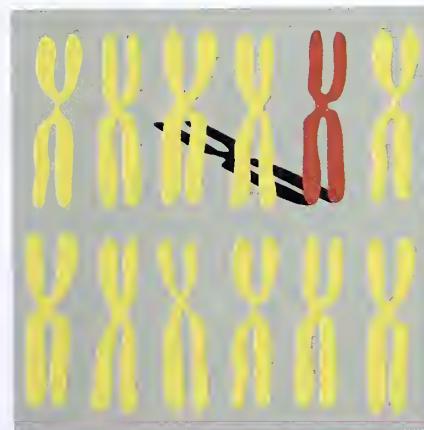
co-director of the Yale Computational Biology and Bioinformatics Program.

Underlying the new project is exome sequencing, a gene sequencing method that targets those parts of the genome that encode proteins. Many inherited diseases are thought to be due to mutations in the exome. "The new sequencing technologies enable us to pinpoint disease-causing genes even with only a few affected subjects. This has really opened up the field," said Lifton, a Howard Hughes Medical Institute investigator.

The new center hopes to identify patients with these mutations and learn the consequences of each genetic deviation. "Identifying the specific genetic causes of these diseases will be useful diagnostically; the therapeutic possibilities will only be revealed when we can link mutations to disease traits," said Lifton.

The Yale team also expects to learn some lessons in basic biology. The link between each gene mutation and disease can teach scientists a great deal about what happens when those same genes function normally, Lifton said. "It really tells us how each gene works in the context of the human body. And this tells us a great deal about how entire pathways work, which is very important to future drug development."

—Sarah P.C. Williams



OTTO STEININGER

ABUSE, NEGLECT, AND GRAY MATTER

Emotional abuse and physical neglect lead to less gray matter in adolescent brains, according to a School of Medicine study published in December in the *Archives of Pediatrics and Adolescent Medicine*.

The brain areas affected may differ in boys and girls, may depend on whether the youngsters were exposed to abuse or neglect, and may be linked to whether the neglect was physical or emotional. The study of 42 adolescents showed reduction in gray matter in youths who reported abuse or neglect, even though the youths had not been diagnosed with a psychiatric disorder.

"This could help to explain their trouble with school performance, or increase their vulnerability to depression and behavioral difficulties," said senior author Hilary P. Blumberg, M.D., associate professor of psychiatry and of diagnostic radiology and in the Child Study Center. More research is needed in order to develop improved interventions to help the youths who have been exposed, Blumberg said.

—John Curtis

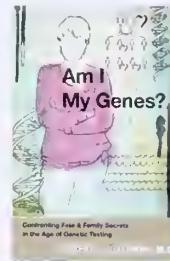
ORPHANS NEED MORE TLC

Orphans may require more TLC than children reared by their biological parents, according to a study by Yale scientists published online in November in *Development and Psychopathology*.

Oksana Y. Naumova, Ph.D., and colleagues compared whole-genome methylation profiles based on blood samples from 14 7- to 10-year-olds raised in Russian orphanages and from 14 children growing up in typical families. Orphans showed changes in the genetic regulation of the systems controlling immune response and intercellular interactions—including mechanisms important in the development and functioning of the brain.

The stress of separation, the study found, affects the long-term programming of genome function. "Parenting adopted children might require much nurturing care to correct these biological effects," said senior author Elena L. Grigorenko, Ph.D. '96, the Emily Fraser Beede Associate Professor in the Child Study Center and associate professor of psychology and of epidemiology (chronic diseases).

—J.C.



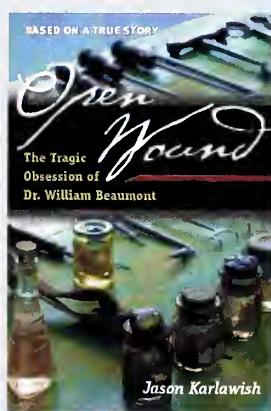
A physician's obsession

How a 19th-century doctor faced the demands of career and ambition.

William Beaumont, M.D., "the father of gastric physiology," achieved fame in a less complicated time. To further his understanding of digestion, he began studying a fur trapper left with a permanent hole in his stomach following a shotgun accident in 1822. Born in Lebanon, Conn., Beaumont had skipped medical school, apprenticed to a Vermont doctor, then enlisted as a surgeon's mate in the War of 1812.

Those were simpler times.

Or were they? In his novelized account of Beaumont's life, Jason Karlawish, M.D., professor of medicine and medical ethics at the University of Pennsylvania, conveys the difficulties confronting a farmer's son who sought not only to make a name in medical research but to earn a handsome income in a location pleasing to his wife. Karlawish suggests that 19th-century pressures on physicians resemble those of the 21st: competing with better-credentialed colleagues; working for unsympathetic



Open Wound: The Tragic Obsession of Dr. William Beaumont

bosses; negotiating with a recalcitrant study subject; and balancing between family and career.

Beaumont did achieve recognition—faculty at the School of Medicine named a club, a lecture series, and a room after him in 1920. Speaking in the Beaumont Room in December, Karlawish said that Beaumont's desire to understand the digestive system spurred him to virtually enslave the injured fur trapper. And that, Karlawish said, reminded him of the tragedy of teenager Jesse Gelsinger, who died in a 1999 gene therapy experiment. "Those research pressures," said Karlawish, "can make you make decisions that you might not otherwise make."

—Cathy Shufro

The Psychotherapy of Hope: The Legacy of Persuasion and Healing
edited by Renato D. Alarcón, M.D., M.P.H.; and Julia B. Frank, M.D.

'77, HS '81, FW '82 (Johns Hopkins University Press) Inspired by the work of Jerome D. Frank and his book *Persuasion and Healing*, this volume of essays broadly assesses the current state of research and practice in psychotherapy. Challenging the claims made for the superiority of cognitive-behavioral, psychodynamic, and other varieties of therapy, the authors—Frank's daughter and one of his former students—examine the values and limitations of competing approaches to diagnosis and treatment.

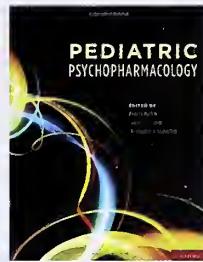
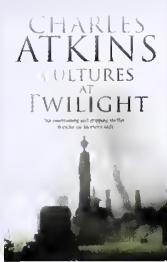
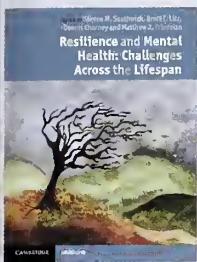
Am I My Genes? Confronting Fate & Family Secrets in the Age of Genetic Testing
by Robert L. Klitzman, M.D., '85 (Oxford University Press)
Although genetic testing has improved the diagnosis and treatment of such diseases as Huntington, cystic fibrosis, and Alzheimer, it leads to difficult decisions for people who fear being tested and question what to do with the results. The author interviewed 64 people who face these dilemmas and describes how they have dealt with the implications of genetic findings for their own lives and those of their family members.

Hematology: A Pathophysiologic Approach
by S. David Hudnall, M.D., HS '82, professor of pathology and of laboratory medicine (Mosby)
This text, part of the Mosby Physiology Monograph Series, offers explanations of hematopoiesis, immunology, hemostasis, hemoglobinopathy, metabolic

disorders, genetics, and neoplasia by using an integrated problem-based approach to learning. The author shows how hematologic disorders are evaluated through blood counting, histopathology, immunohistochemistry, cytogenetics, and coagulation testing. An online version is also available.

Desmoid Tumors
edited by Charisse Litchman, M.D., '88, HS '89 (Springer) This text, the first publication devoted entirely to desmoid tumors (DT), discusses this rare fibroblastic proliferative disease, which has an incidence of 2 to 4 new cases per million people per year. Clinical presentations, imaging guidelines, and treatment paradigms are highlighted, along with a discussion of the unique issues in treating children with DT. The book also describes emerging research techniques and the role of advocacy groups in supporting research and promoting awareness of such rare diseases as DT.

Resilience and Mental Health: Challenges Across the Lifespan
edited by Steven M. Southwick, M.D., HS '85, Glenn H. Greenberg Professor of Psychiatry, Post-Traumatic Stress Disorder, and Resilience; Brett T. Litz, PH.D.; Dennis Charney, M.D., HS '81; and Matthew J. Friedman, PH.D., M.D. (Cambridge University Press) This book brings together experts whose research has focused on adaptive responses to stress, which are less well understood than stress-related disorders. Each of the book's five sections examines relevant concepts, ranging from factors that contribute to and promote resilience to specific applications and contexts of resilience, as



well as interventions to enhance healthy adaptation to stress.

Vultures at Twilight

by Charles Atkins, M.D., lecturer in psychiatry (Severn House) Lil and Ada, longtime friends and neighbors in a Connecticut town, prove to be unlikely heroines when a severed finger shows up at the Friday night antiques auction, and they have to wonder: Where's the rest of the body? That question leads to the revelation of small-town secrets and the unraveling of a mystery that shows that all is not well in a town famed for its postcard-perfect New England charm.

Prenatal Diagnosis: Cases & Clinical Challenges

by Miriam S. DiMaio, M.S.W., senior genetic counselor; Joyce E. Fox, M.D., FW '86; and Maurice J. Mahoney, M.D., J.D., FW '70, professor of genetics, of obstetrics, gynecology, and reproductive sciences, and of pediatrics. (Wiley-Blackwell) This book is based on the authors' decades of experience during an era of rapid development in *in utero* diagnosis. The authors use real cases to portray diagnostic problems as a route to underlying biology, available testing options, and results that may be obtained. The authors discuss the challenges of management, interpretation, and counseling by emphasizing three types of clinical problems: chromosomal abnormalities; Mendelian disorders; and fetal structural abnormalities.

The Practice of Perioperative Transesophageal Echocardiography: Essential Cases

edited by Albert C. Perrino Jr., M.D., HS '87, FW '88, professor of

anesthesiology; Scott T. Reeves, M.D., M.B.A.; and Kathryn Glas, M.D. (Lippincott Williams & Wilkins) This text provides more than 100 teaching cases, presented in a question-and-answer, self-test format. The cases cover clinical challenges faced by perioperative echocardiographers, including disorders of the aorta, left ventricle, and right ventricle; valvular heart disease; congenital heart lesions; catheter and device placement; and unsuspected masses and thrombi. A companion website contains the fully searchable text plus echocardiographic video clips for each case.

Pediatric Psychopharmacology, 2nd ed.

edited by Andrés Martin, M.D., M.P.H. '02, Riva Ariella Ritvo Professor in the Child Study Center and professor of psychiatry; Lawrence Scahill, M.S.N. '89, M.P.H. '89, PH.D. '97, professor of nursing and child psychiatry; and Christopher J. Kratochvil, M.D. (Oxford University Press) The editors have streamlined the flow of information to reflect the accumulation of scientific data since the first edition. The overall structure of the book remains the same, with major sections on underlying biology, somatic interventions, assessment and treatment, and special considerations.

The descriptions above are based on information from the publishers.

SEND NOTICES OF NEW BOOKS TO
Cheryl Violante, Yale Medicine,
1 Church Street, Suite 300,
New Haven, CT 06510, or via
e-mail to cheryl.violante@yale.edu

Summer heat deadlier

Research models that estimate how many people might die in urban heat waves will help government agencies better respond to them, said a biostatistician who predicts that air pollution will make summers in the United States deadlier by the end of the century. The research is also an argument for stricter regulation of pollutants, according to Francesca Dominici, PH.D., M.P.H., associate dean for information technology at the Harvard School of Public Health. Dominici was a guest lecturer at a School of Forestry and Environmental Studies seminar in January.

The most severe cardiovascular and respiratory effects stem from elemental carbon and organic carbon matter—pollutants that are one-twentieth the diameter of a human hair. These particles are generated from vehicle emissions, diesel engines, and burning wood. In 1995, some 700 deaths in Chicago were attributed to a July heat wave, said Dominici. By 2081, a hot spell could kill between 2,100 and 17,500 people there, she said—a figure that can't be attributed only to a larger population.

Dominici and her colleagues developed the models by studying recent weather records, environmental trends, and Medicare data. In Chicago, they found that hospital admissions for heat stroke between 1987 and 2005 "identified a heat wave much better than the temperature [readings]."

—John Dillon

"Good science has won out"

The controversy over childhood inoculation came to Yale when audience members confronted an expert who declared that the anti-vaccine movement is "fraying at the edges."

For 30 years news articles have blamed vaccines for serious defects in children, leading parents to refuse inoculations for their children, said Paul A. Offit, M.D., chief of the Division of Infectious Diseases at Children's Hospital of Philadelphia and author of the 2008 book *Autism's False Prophets*. Though inaccurate, those articles are effective, he said, because "we're very much moved by emotion." But "the pendulum is swinging back," said Offit, who delivered the Beaumont Lecture in January.

When anti-vaccine blogger Jake Crosby tried to ask a question, Offit accused him of stalking him and asked him to leave. After Crosby left, Mary Holland, co-author of a book questioning vaccine safety, told Offit he was "not willing to engage" with critics.

Offit said that "good science has won out." A turning point occurred in January 2011, when an editorial in *BMJ* (formerly the *British Medical Journal*) called articles by a British physician that linked autism to the MMR vaccine an "elaborate fraud."

Offit urged vigilance to prevent the anti-vaccine movement—and largely forgotten childhood diseases—from re-emerging. "Never let anything go unchallenged," he said.

—J.D.

World War I sacrifices for a greater good

Government posters urged Americans to save food for troops and for civilians in war-torn Europe.

By Jill Max

The image is haunting: against a background of imploring children with outstretched arms, a gaunt woman cradles an infant in one arm and holds a little girl close with the other. Although it looks like a museum-worthy work of art, this picture on a World War I poster exhorted viewers, “Don’t waste food while others starve!”

One week after entering the war in April 1917, the U.S. government established a Committee on Public Information (CPI) to involve the nation in the war effort. The committee’s materials included a poster campaign designed to help the U.S. Food Administration, headed by Herbert Hoover, in its drive to feed the troops and ensure an adequate food supply for the civilian population at home and abroad. “It was considered effective at instilling patriotic feelings and actions of self-sacrifice,” said Susan Wheeler, curator of prints and drawings at the Cushing/Whitney Medical Library, which displayed Yale’s collection of World War I food posters in the fall of 2011.

The poster campaign was overseen by the Division of Pictorial Publicity, led by Charles Dana Gibson, one of the best-known artists of the time and creator of the Gibson Girl. The division invited other top artists and illustrators

to contribute designs. Every Friday the group and government officials met over dinner to decide what kind of poster was needed. By the end of the war, 700 poster designs had been submitted on a variety of topics, including food. The cost to the government was only \$13,000, as the artists donated their time and materials.

George Creel, a Denver journalist who chaired the CPI, later recalled, “I had the conviction that the poster must play a great part in the fight for public opinion. The printed word might not be read, people might not choose to attend meetings or to watch motion pictures, but the billboard was something that caught even the indifferent eye.” Indeed, because the posters were widely displayed in shops, schools, and other locations, it was impossible to escape their messages.

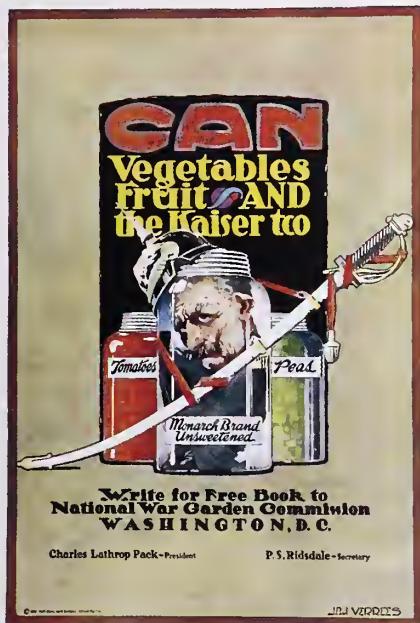
The earliest CPI posters were simple text designs instructing the public not to waste food, with tips on which items to conserve to “serve the cause of freedom.” Such famous figures as Abraham Lincoln, Woodrow Wilson, and Joan of Arc appeared as symbols of patriotism and self-sacrifice.

Images from the front lines helped the public visualize the ravages of war-torn Europe. Eight artists commissioned as captains accompanied the American Expeditionary Forces overseas and produced more than 300 drawings, including scenes of a food convoy winding through a snowy landscape and an American soldier standing over a fallen German. These images helped the

public understand how small sacrifices at the dinner table might be transformed into meaningful contributions to the war effort.

Food posters were tied to such other media as pamphlets, films, poetry, and music. In his poem “Thoughts Inspired by a War-time Billboard,” Wallace Irwin memorialized a poster by the artist Wallace Morgan in the line “Wallie Morg’s ‘Feed a Fighter’ lurks deep in his trench....” The popular marching song, “We’re Off to Can the Kaiser,” was adapted by the Belgian artist J. Paul Verrees for one of the best-known posters of the National War Garden Commission, which urged citizens to “Can Vegetables, Fruit and the Kaiser Too.” The poster was reissued in 1919 after the end of the war with the heading, “The Kaiser Is Canned.”

The medical library’s 10 food posters are part of its larger collection of about 500 posters related to public health and nutrition. They can be viewed online at <http://cushing.med.yale.edu/gsdl/cgi-bin/library?p=about&c=mdposter>.



During World War I the U.S. government tried to involve the public in the war effort by urging people to save food for troops and civilians in Europe. The earliest posters offered tips on ways to avoid wasting food, and evoked such figures as Abraham Lincoln, Woodrow Wilson, and Joan of Arc. The artists who created the posters were among the best-known of their day, including Charles Gibson, creator of the Gibson Girl. They donated their time and talents to the war effort.

Victory is a Question of Stamina

Send - the Wheat Meat · Fats · Sugar *the fuel for Fighters*

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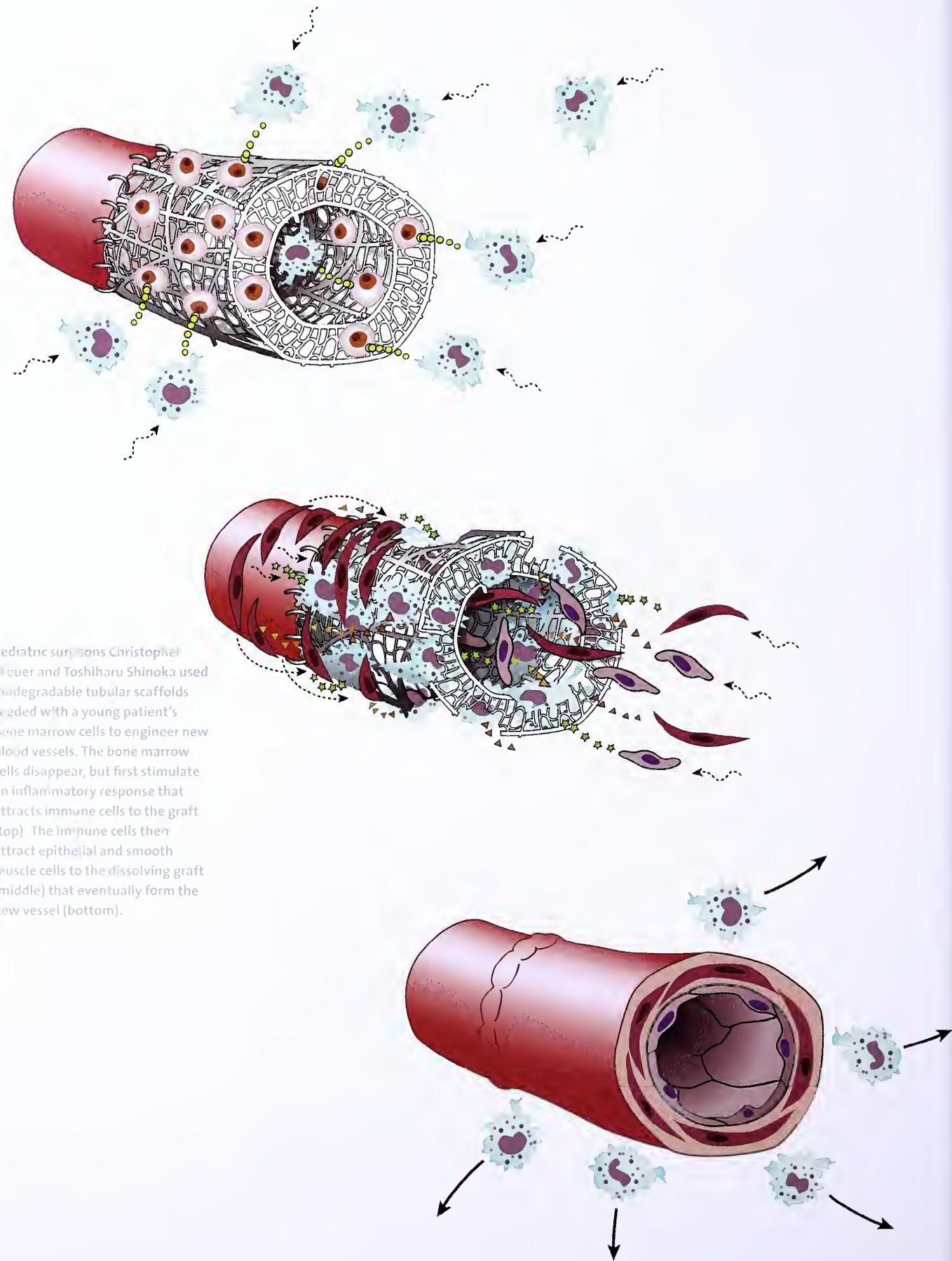
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**don't waste food
while others starve!**

UNITED STATES FOOD ADMINISTRATION



Tissue from the lab mends a broken heart

A 3-year-old Bridgeport girl becomes the first patient in the United States to receive a bioengineered blood vessel.

By John Curtis

Angela Irizarry was still in her mother's womb when tests revealed that one of her heart's two ventricles wasn't working. She was destined to be a "blue baby." With only one functional ventricle, oxygenated and deoxygenated blood would mix within that ventricle, causing hypoxia and the bluish coloration of the skin that gives the syndrome its name. In 1968 a surgeon named Francis Fontan, M.D., devised a procedure that has become the standard of care to palliate this condition. It involves three surgeries to redirect blood flow: one a few days after birth; a second a few months later; and a third when the child reaches the age of three. In that final procedure a plastic tube is inserted to channel blood from the inferior vena cava to the lungs. For Angela, however, surgeons had something different in mind. She would undergo the first two surgeries as usual—but for the third, a biodegradable scaffolding seeded with cells from her own bone marrow would replace the plastic tube. She would be the first patient in the United States to receive a bioengineered cardiac blood vessel.

A meeting at MIT

On the window sill of his office in the Boardman Building, Toshiharu Shinoka, M.D., Ph.D., keeps a photo of his days as a postdoctoral fellow in Boston in the 1990s, where he met his friend and colleague, Christopher K. Breuer, M.D. Also in the group photo are Joseph P. Vacanti, M.D., an expert in tissue engineering; and Robert Langer, Ph.D., the MIT professor

renowned for his innovative medical devices. Shinoka, associate professor of surgery and pediatrics and director of pediatric cardiovascular surgery, and Breuer, associate professor of pediatric surgery and pediatrics, met while studying under Vacanti and Langer at Children's Hospital Boston.

"What made me become interested in tissue engineering was the fact that on a daily basis in my training I would see problems arise that we couldn't fix. I would watch children die and watch families fall apart. That obviously left a bad taste in my mouth," said Breuer. "In surgery there are many problems we could fix if we had adequate tissue. Tissue engineering provided means of creating an abundant source of tissue for surgical reconstructive procedures."

The pair first attempted to engineer intestines, but found that the science of the day was not up to the task of producing such complex tissue. They switched to blood vessels and found a technique that worked. They created a biodegradable scaffolding with a matrix for seeding cells as well as sites for cell attachment and tissue formation, then implanted it in a lamb. "The scaffolding degrades and the remaining tissue is viable and it's made from people's own tissue, so you can avoid problems like rejection," Breuer said.

But problems remained. "Using our original method it took three months to grow the cells, and seed, and incubate the scaffold. Surgeons don't have three months to wait for a blood vessel," Breuer said. Waiting that long also

increased the odds of contamination and the risk of evolution running its course—cells in culture could differentiate and change their identity or even become tumor cells.

The collaboration ended when Breuer entered the U.S. Air Force and Shinoka returned to Tokyo Women's Medical University Hospital to continue his research. He switched from blood vessel cells to bone marrow cells, which are so abundant that they don't need to be grown in culture. That cut the time needed to make the grafts from a few months to a few hours. Shinoka began implanting the biodegradable grafts in humans with promising results.

When Breuer heard of Shinoka's success he was still in the military and attending to injured veterans of the war in Afghanistan. "It was one of those days in your life where you get hit by lightning," Breuer said. "I just knew what I was going to do with the rest of my career."

By 2003 Breuer had moved to Yale, lured by a new tissue engineering initiative and faculty, including W. Mark Saltzman, Ph.D., chair and Goizueta Foundation Professor of Biomedical Engineering and Chemical and Environmental Engineering, who had also trained under Langer at MIT; Jordan S. Pober, M.D. '77, Ph.D. '77, HS '78, Ensign Professor of Immunobiology, professor of dermatology and of pathology, and director of the Human and Translational Immunology Program; and William C. Sessa, Ph.D., Alfred Gilman Professor of Pharmacology and director of the Vascular Biology and Therapeutics Program. "It was a wonderful environment in which to perform translational research," Breuer said.

Three years later he urged Shinoka to join him. "It was very suitable for our future research so I decided to come over here," Shinoka said. "In the United States no one was doing this kind of approach."

Rearranging the heart

"When I was five months pregnant they asked me to have a test because I was 37 years old and there was a risk that the baby would have defects," recalled Claudia Irizarry, Angela's mother. She works as a secretary in a church; her husband, Angel, is a contractor. "They figured out that all her organs were backwards. In the same ultrasound they saw that she had this heart condition. Right away they told me that she was going to need three surgeries."

Congenital heart disease is a common birth defect, occurring in one in 100 live births. Single-ventricle physiology, a relatively uncommon subcategory of congenital heart disease, stems from several heart anomalies but leaves children with only one functional ventricle. One of the two ventricles may be larger than the other, or there may be no wall between the two ventricles. These defects force the functioning ventricle to do the work of two, pumping blood for both the lungs and the rest of the body. It also mixes oxygen-rich blood leaving the lungs with deoxygenated blood from the veins from the lower body, leading to the "blue baby"

syndrome. Without surgical intervention, about 70 percent of children with the defect die in the first year of life. Few reach adulthood. The Fontan procedure, though palliative rather than curative, has been the only solution.

"What this operation did was rearrange the plumbing, so that that one ventricle could pump blood to the body, and then that blood would return and go through the pulmonary circulation passively, without a ventricle pushing it through. This prevented the mixing of blood so the children were no longer cyanotic," Breuer said.

Despite its benefits, the Fontan procedure posed problems. It required the use of synthetic materials that could lead to blood clots and other complications. It also meant a lifetime of blood-thinning drugs for the patients. The synthetic grafts left children vulnerable to infections. And the grafts could not grow with the children. "Children can outgrow their operations, just the way they can outgrow their shoes. Imagine living in a world where every time you outgrow your shoes you have to go back to the operating room," Breuer said.

Angela would receive a biodegradable graft—a scaffolding made with bioengineered tissue seeded with cells from her bone marrow. It would connect the inferior vena cava—the vein that transports deoxygenated blood into the heart's right atrium—with the arteries that carry blood to the lungs. She would require neither immune suppressants nor blood thinners. The bioengineered graft would also reduce the risk of infection. The operation would raise Angela's oxygenation level, give her more energy, and lead to better growth and development.

"We wanted to choose the right patient for undergoing this procedure. Just as important, we wanted to find the right family," Breuer said. "We talked to a number of people but felt the Irizarry family were quite a special family. They were probing and they asked appropriate questions."

Building a blood vessel

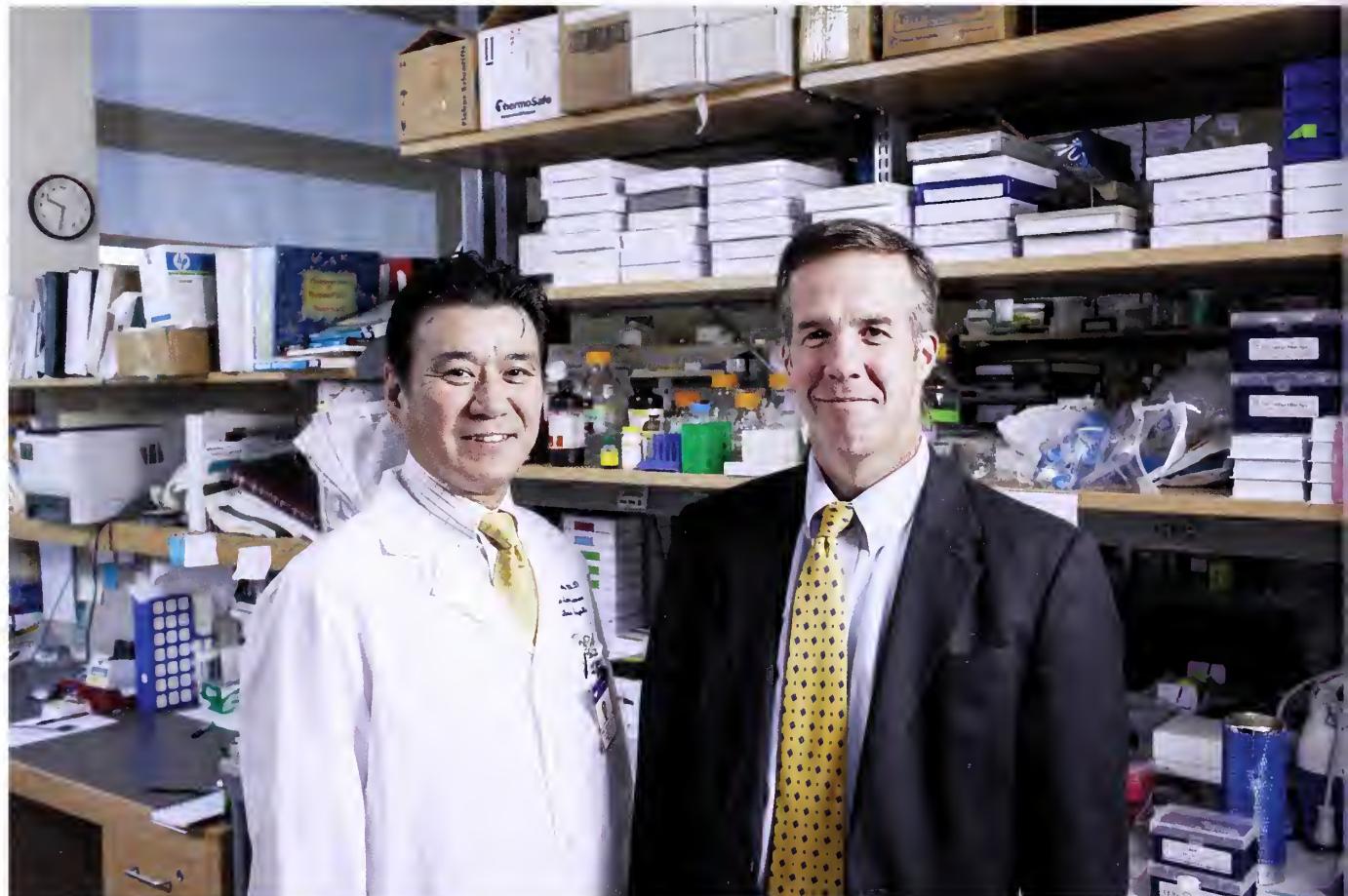
Shinoka had used his technique in 25 patients in Japan. But when it came time to seek FDA approval, there were questions about how it worked. The FDA wanted to know what was happening during the graft's formation and why. The answers would take years to find and fill 3,000 pages.

Shinoka and Breuer believed at the time that bone marrow cells were a source of stem cells that turned into blood cells. But the bone marrow cells they were seeding onto the grafts disappeared after a week. They repeated the experiment, with the same results. If the stem cells were differentiating into blood cells, why did they vanish? After more experiments, which involved inserting a fluorescent dye into the cells so they could be tracked in mice, the researchers realized that even though they were getting the right result, they had misunderstood the mechanics of what was happening. The stem cells were not engineering new tissue. Rather, the stem cells were using molecules typically seen in



JOHN CURTIS

Angela Irizarry, now 4, shown with her mother Claudia, is the first patient in the United States to receive a bioengineered heart vessel. Angela was born with only one functioning heart ventricle.



Toshihara Shinoka and Christopher Breuer met in the 1990s as post-docs at MIT, where they shared an interest in creating bioengineered tissue for use in surgery. Now both are at Yale, where they worked on the first implantation of a bioengineered heart vessel in the United States.

inflammation to induce cells to leave nearby blood cells and regenerate. "It was much like how a salamander regrows its tail, or a starfish regrows an arm that's been cut off," Breuer said. "The scaffolding enabled the body to recreate a blood vessel. It enabled us to identify some of the molecular signals that were really important for this process, which we could then manipulate in our model systems."

"It's a milestone in tissue engineering," said Gary S. Kopf, M.D., professor of surgery, who performed Angela's surgery with Shinoka. "Dr. Breuer and Dr. Shinoka's lab work is pioneering in terms of working out the mechanism of how tissue-engineered blood vessels form."

"Moving this to the clinic is clearly a landmark accomplishment," said Langer, the MIT professor. "This is a very significant achievement, that they have been able to take this very basic work in the laboratory and test it in people. You need to get the right biocompatibility. You need the right mechanical properties. You have to make it cell-compatible. You have to do it in such a way that there are no foreign body reactions."

Between the lab and the operating room

The surgery began at 6 a.m. on a morning in August 2011, when the surgeons aspirated Angela's bone marrow. They needed 5 ccs of bone marrow for each kilogram of her body weight, between 55 and 70 ccs total. The operating room team included two attending surgeons, one surgical fellow, two anesthesiologists, two perfusionists, and two nurses. A five-minute walk away in the Richard D. Frisbee III Laboratory of Stem Cell Transplantation and Hematopoietic Graft Engineering, five postdoctoral fellows seeded the scaffolding with Angela's bone marrow—a three-hour procedure. The timing had to be just right. The seeded scaffolding had to be ready when the surgeons needed it so as not to prolong the surgery. Before the operation the team practiced preparing the scaffolding more than 20 times with bone marrow purchased from a blood bank, Shinoka said. "We had stopwatches and we were trying to save every second we could," Breuer said.

In addition, per FDA regulations, more than 10 tests had to be performed on the graft before it could be implanted to ensure that it was neither toxic nor infected.

While the fellows were preparing the graft, Shinoka and Kopf were in the operating room, preparing Angela's heart. They needed about two hours to remove scar tissue from her previous surgeries. Throughout the operation the surgical team was in contact with the hematology fellows preparing the graft. "We were communicating every 30 minutes. The timing was pretty good," Shinoka said.

Once the surgeons had the graft, which measures 18 mm in diameter by 4 to 5 centimeters in length, they connected Angela to a cardiopulmonary bypass machine for an hour while they implanted it. The entire operation lasted about eight hours.

The procedure, said Kopf, follows the path of the traditional Fontan procedure. "It is the same exact surgery," he said, noting the one difference. "Instead of using a piece of plastic, usually Gore-Tex, we used the tissue-engineered graft. In terms of the surgery, I would say it is a little easier to use. It is thinner and more flexible and seems to hold the sutures very well. It doesn't seem to have any bleeding, and the Gore-Tex does have a little more bleeding."

Angela is not only the first patient in the United States to receive a bioengineered blood vessel but also the first of six patients participating in a five-year clinical trial. Breuer and Shinoka will monitor her for three years after her surgery. They will watch for complications from the graft and determine whether the graft does in fact grow with the child. Over time the surgeons plan to measure its size and compare it to normal blood vessels.

"We have taken a very cautious approach," Breuer said. "We wanted to learn as much as we could from each patient before we went on to the next patient. We will do one patient, wait for six months; do two patients, wait six months; do three patients, wait six months."

A child's recovery

So far the surgeons have been pleased with Angela's recovery, as have her parents. Angela has reached all her post-operative milestones, Breuer said. "The last time I saw her in clinic she was a normal 3-year-old running around. I think Angela will be a very normal child."

"Before when she wanted to run with her brother, she got tired," said Claudia Irizarry. "Now, she doesn't want to stop. She can keep going. Her oxygen level is very, very good now."

On a chilly day in December, Claudia kept her daughter inside, even though she's strong enough to play outside and ride a bicycle. She has never attended day care or school, nor can she play with children other than her brother, because during her recovery she's still susceptible to infections. At home, where she lives with her parents, brother, and grandmother, Angela likes to play games on the computer, watch Scooby-Doo on television, and curl up in her mother's lap.

"If God sent me the baby, God also sent me the angels to care for her," Claudia said. "I always believed that everything was going to be okay. She is very positive. She's very happy. My hope for her is the same that all moms have, that she can do whatever she wants, that she can grow up and be a good person. I tell her I hope she grows up to be a doctor, to help kids the same way they helped her." **YM**

John Curtis is the editor of Yale Medicine.

WEDNESDAY Lee Cline, a community outreach director at the Community Foundation for Greater New Haven, led Robert Wood Johnson Foundation clinical scholars on a tour of New Haven's Fair Haven neighborhood last summer. At the start of each academic year scholars visit the areas

where they will be doing research that will benefit local communities.

RIght Scholar Oni Blackstock, center, at a seminar with fellow scholars. Blackstock worked with a New Haven community group on food issues.





Scholars work toward healthy communities

Yale's Robert Wood Johnson Clinical Scholars make a point of engaging the community in their research and making the world a healthier place.

By Jennifer Kaylin

When Oni Blackstock, M.D., arrived in New Haven in the summer of 2010 to begin her fellowship as a Robert Wood Johnson Foundation (RWJF) Clinical Scholar, she and some of the other fellows took a walking tour of the city's West River neighborhood—home to many of the patients treated by Yale physicians.

"I was really excited," says Blackstock. "I know a lot of people who have spent years in New Haven and have never gone to these communities. I think it's really important to get a sense of the reality of your patients' lives. You don't get that just seeing them in the office."

The tour served its purpose. Blackstock saw the urban neglect, the effects of unemployment, lack of access to healthy foods, limited recreational facilities, and the residents' reliance on public transportation. She also saw, in the community leaders who led the tours, the neighborhood's strength and resiliency. What Blackstock didn't see, at least initially, was how what she learned on the tour would dovetail with her own clinical interests, inform her work as an RWJF fellow, and most likely influence her medical career well into the future.

As the tour was winding down, the scholars were taken to a meeting of the West River Neighborhood Services Corporation. Community residents had gathered to discuss a number of issues, including where they were going to buy their food now that the Shaw's Supermarket chain had closed its store on Whalley Avenue.

"As a primary care doctor I care a lot about food insecurity and its health consequences, and I knew that we would be able to help the West River residents in some capacity," says Blackstock, who attended Harvard Medical School.

With the loss of Shaw's, community organizers were weighing other food distribution options—possibly a food co-op, another supermarket, or a buyers' club—but first they needed to figure out what neighborhood residents want and would be prepared to support. Blackstock and Jed Barash, M.D., a first-year scholar, worked with neighborhood corporation members to develop a survey tool to gauge community needs and feelings.

Although a Stop & Shop supermarket has recently opened in the old Shaw's site, Blackstock says strong support remains for an alternative. Their survey specifically asked whether Stop & Shop satisfies the neighborhood's grocery needs. Noting that some residents expressed concern about Stop & Shop's prices, she said, "We believe affordable quality food remains a need, even with the presence of Stop & Shop."



ABOVE & RIGHT Scholars Clara Filice and Gregg Furie are examining the public health impacts of a plan to fill in the Route 34 Connector and build apartment buildings and office space above it.

TOP Such urban issues as pedestrian safety, gun violence, motorcycle safety, and access to affordable food, have been subjects for research by clinical scholars.



This finding is something that wouldn't be known without engaging the community. Replacing one large supermarket with another would seem to be the ideal solution—but when residents were surveyed, a different picture emerged.

"When the research is generated by the community, it's a more holistic, honest, and genuine way to approach research," says Blackstock. "Forming these partnerships helps community members understand what research is, and it builds a bond between academia and the community."

This bonding, administrators of the Yale RWJF Clinical Scholars Program would say, is exactly how their program is supposed to work. "What we're aiming for is alignment of the scholars' passions and the needs of the community they are serving," says Marjorie Rosenthal, M.D. M.P.H., the program's assistant director.

Such community-based participatory research is an important facet of the program, says Program Director Harlan M. Krumholz, M.D., the Harold J. Hines Jr. Professor of Internal Medicine. "We have maintained our traditional commitment to teaching core competencies in research and enriched our curriculum with this work. We are a program that trains people for a variety of roles in a range of organizations, but we are trying to change the paradigm of research too—with an emphasis on thinking about the end-user of the knowledge."

People who ask the next question

In 1973, Yale was one of the founding sites for the nascent RWJF Clinical Scholars Program, a two-year fellowship that teaches research skills, health policy, leadership, media/communication skills, and community health. The other three sites

are the University of Michigan, the University of Pennsylvania, and the University of California, Los Angeles.

Young doctors apply for RWJF fellowships after they've completed their residencies, with seven or eight scholars a year being accepted into the Yale program. Upon successful completion of the program, they receive the degree of Master of Health Sciences Research.

Rosenthal said that the ideal clinical scholar candidate is someone who is interested in the interplay between research and policy. "We're looking for people who, when they're on rounds, are continually asking the next question," she says. "If the patient has anemia, they're not satisfied asking, 'How should we treat this?' They want to know why the patient has it; is there something about the social structure that contributed to this?"

Krumholz adds that the successful RWJF scholar is willing to challenge the conventional wisdom. "Just because that's the way things have been done for a long time doesn't mean it's the right thing," he says. "The inclination is to just go along. We want critical thinkers who have the courage of their convictions."

The program is divided into a didactic year followed by a year devoted to research. Coursework includes training in clinical epidemiology, community-partnered research, health economics, health policy, health systems management, organizational behavior, and leadership development. The four foundational courses are biostatistics; clinical and health services research methods; principles and processes of community-based research approaches; and principles of health policy and management.

Central to scholars' training is the expectation that they will conduct two or more health services research projects during their fellowship and contribute to scholarship in clinical research. They are encouraged to undertake at least one project that involves primary data collection and tackle projects that use different methodological approaches. Scholars are also expected to maintain their clinical skills through interactions with patients at Yale-New Haven Hospital, the VA Connecticut Healthcare System in West Haven, or affiliated clinic, hospital, or community-based health centers.

To date, 151 scholars have graduated from the Yale program, with seven more graduating in 2011. Graduates work in a wide range of jobs in academia and politics as well as holding other positions in the public, private, and nonprofit sectors. Stephen Cha, M.D., FW '06, is the chief health care policy advisor to U.S. Representative Henry Waxman, D-Calif.; Katherine Goodrich, M.D., FW '10, is the chief medical officer of the Office of Planning and Evaluation at the U.S. Department of Health and Human Services; David M. Krol, M.D., FW '01, is the team director and senior program officer of human capital at the Robert Wood Johnson Foundation; Eric S. Holmboe, M.D., PH.D., FW '98, is the chief medical officer and senior vice president of the American Board of Internal Medicine; and Anu Gupta, M.D. '97, HS '00, FW '02, oversees the HIV/AIDS

philanthropic portfolio of Johnson & Johnson's Corporate Contributions Division.

A move to community-based research

The original program's stated mission, according to Krumholz, was training fellows to be "skilled in clinical research to the same extent that people were in basic sciences," and to understand research methods, develop fluency in the language of clinical research, and become astute readers of the scientific literature. "Our ulterior motive," he adds, was to sharpen critical thinking skills. "We wanted them to be able to pinpoint the key leverage points in medicine and make a difference."

The founding director of Yale's clinical scholars program was the late Alvan Feinstein, M.D., Sterling Professor of Medicine and Epidemiology. Under his direction the Yale program developed a reputation for excellence in training its scholars in clinical research methods. As the RWJF program matured both nationally and at Yale, however, its mission evolved. In the most recent funding cycle, which began in 2005, national directors maintained the rigorous training in research methods, but added a new emphasis on community-based participatory research.

"We fully embraced the idea," says Krumholz. "Too often we're doing research without soliciting input from the people we're seeking to help." Krumholz calls the result "confetti papers"—research papers that are published, maybe even attract some press coverage, but generate "no conversation." He says this lack of feedback usually occurs because there wasn't enough front-end work with the end-users. "Other researchers may cite the paper," he said, "but that doesn't matter if it doesn't lead to action."

Now, six years into the latest funding cycle, Krumholz calls Yale's community-based participatory research initiative "the jewel of our program." At least 15 percent of the scholars' time is devoted to research in partnership with organizations serving New Haven. The work is guided by the Steering Committee on Community Projects, composed of a cross-section of community representatives and Yale affiliates working with the New Haven community. So far, seven projects have been completed and disseminated; another 10 are either under way or being planned.

Yet in the beginning it was far from a given that community leaders would agree to partner with the scholars. "People were suspicious when we proposed this," Krumholz recalls. "They'd had people like us approach them before and write them into their grants, only to lose interest in them as soon as the grant came through. I made a personal promise that we wouldn't abandon them—that this was a sincere, genuine offer."

New Haven's size and demographics make it an ideal place to conduct community-based participatory research, says Georgina Lucas, M.S.W., deputy director and steering committee chair of the Yale RWJF clinical scholars program. "It's a microcosm of a much larger urban area," she said. "You can

get your arms around it, and it's small enough that you can build relationships and disseminate information."

The challenge, she adds, is completing a project within the two years the scholars are in the program. "People don't realize how much time community research takes," she says. "You need to engage your stakeholders to get complete and accurate information and to create effective and sensitive interventions, but that means building relationships and trust—which takes time."

Gun violence and motorcycle helmets

When Chisara N. Asomugha, M.D., M.P.H., FW '09, was in the program, her community-based participatory research focused on youth-related gun violence in New Haven. Working with the New Haven Family Alliance, she used an established research approach called Photovoice to collect data. New Haven youths between the ages of 14 and 19 were given cameras and asked to photograph scenes reflecting their community's strengths and challenges. The photographs were then used as a stimulus for focus group discussions with an eye toward gaining insights into local policy and service needs.

After the project was completed, the photographs were displayed in the New Haven Public Library, while Asomugha, who attended the Duke University School of Medicine, shared her final report with Mayor John DeStefano Jr. Soon afterward she was hired as New Haven's deputy mayor for community services.

Gregg Furie, M.D., drew inspiration for his community research project from the city's plan to remove the Route 34 Connector in an effort to reconnect the medical campus and adjacent neighborhoods with the rest of the city. He's been working with fellow scholar and pediatrician Clara Filice, M.D., and the city's health, planning, and economic development departments to conduct a health impact assessment that will focus on pedestrian and bicycle safety, activities for walkers, and reducing accidents. "It's a way to introduce health as a consideration in public policy decision making," says Furie, who got his medical degree from Harvard. "City planning and public health have different objectives, so we're trying to make sure the public health impact doesn't get lost."

In talking about their research projects, all the scholars say they are gratified to have the opportunity to contribute to addressing real health needs; but they also recognize that through the cultivation of personal relationships with community members and the process of consensus building—which is so important for the success of a community project—they are developing other skills that will be valuable in their later careers.

Adam Landman, M.D., FW '10, wanted to do a research project on the correlation between wearing a motorcycle helmet and serious injuries. Krumholz questioned whether the topic might be too obvious—of course wearing a helmet reduces the likelihood of serious injury.

"One of the most beneficial parts of the program," Landman says, "is learning to clearly articulate the importance and value of the research you're doing." In the case of the helmet study, Landman and Michael Phipps, M.D., his RWJF partner, were able to persuade their professors and colleagues that the project was worthwhile. "We knew from the outset that the results wouldn't be novel," Landman says, "but we were okay with that. There had been discussions in the past about making helmet use mandatory in Connecticut, but there was no recent data to inform the decision making. Our goal was to use our research skills and rigorous methodology to inform an important public health topic."

In her new job as deputy mayor, Asomugha is already seeing the value of acquiring a deeper understanding of the social determinants of health that she gained through her training as a clinical scholar. She cites an incident she says is not atypical, concerning a woman who had been scrupulous about getting her daughter to her medical appointments. "They rode their bikes and were always on time," Asomugha says. "After one appointment, the doctor gently told the mother that her child should wear a helmet when bike riding. The woman missed her next appointment, and the doctor didn't know what had happened." Upon hearing the story, Asomugha quickly understood—the mother couldn't afford a helmet. Embarrassed and unwilling to risk what she saw as further rebuke, she skipped her appointment. "It's the unintended consequences of trying to do a good thing," Asomugha says. "It's very common, and it's something we need to try to anticipate and avoid."

Peggy Chen, M.D., FW '10, learned a similar lesson during her time in the clinical scholars program. She was helping the New Haven Healthy Start Program Consortium develop a brochure about obesity and the importance of exercise and healthful eating.

"We came up with an initial draft and thought, 'This is great. They're going to love it,'" Chen says. "They changed every word and all the photos." The problem, Chen came to learn, was that the brochure, complete with photos of overweight women standing on scales, had the scolding tone of a finger-wagging gym teacher. "You'll get high blood pressure; you'll get diabetes, blah, blah, blah. These women have gotten negative messages from everywhere else. They didn't need another one from us." The new draft, which emphasizes all the positive things that can happen when one lives a healthful lifestyle, was quickly approved.

The community takes notice

It's not just the scholars who see the value in the program's community research component; community partners in New Haven and RWJF's national program office have also taken notice.

Rebecca Allen, director of programs and services for the Columbus House homeless shelter, remembers when Ryan



JOHN CURTIS (3)

Greyson, M.D., a RWJF scholar, contacted the shelter's executive director, Alice Cunningham. Greyson's project was to find ways to improve communication between the shelter and Yale-New Haven Hospital. "We get lots of people coming through here wanting to talk or do research," she says, "but Ryan brought it to a whole new level. He partnered with clients and staff. He gave us feedback and held our hand every step of the way. Usually doctors don't speak our language, but Ryan does. He's always very understandable and approachable."

Desmond Runyan, M.D., D.P.H., the RWJF national program director, was even more effusive. "The Yale program is doing exceptional work in the community," he says. "Harlan and his staff are doing a superb job." This finding is all the more noteworthy, he adds, because Yale hasn't always enjoyed the most collaborative relationship with its host city. "Yale has a reputation for having a town/gown split, so it's remarkable how strong the ties are now, how invested people have become. Overall, the success of community-based research is best exemplified in Yale."

Runyan also cites Yale's leadership component as an area where it excels. About four years ago, under the stewardship of Irwin Birnbaum, J.D., the medical school's former chief operating officer, and David Berg, Ph.D., clinical professor of psychiatry, the clinical scholars program began offering seminars in leadership development and organizational management. Scholars are given an opportunity to shadow health industry leaders and attend group discussions when such leaders come to campus.

But in this latest iteration of the clinical scholars program, it is the commitment to community-based participatory research

LEFT Clinical scholars helped organize a farmstand in the West River neighborhood. The stand, operated by CitySeed, opened in July 2011. CitySeed outreach coordinator Cara Donovan (left) sold fresh vegetables to residents.

ABOVE TOP Harlan Krumholz, director of the scholars program, led a seminar with scholars in October.

ABOVE Clinical scholar Oni Blackstock (right) worked with community groups in New Haven's West River neighborhood on issues including access to healthy food. She joined, from left, community partner Ann Greene, scholar Jed Barash, community partner Stacy Spell, and community organizer Billy Bromage.

that is exciting the scholars, winning over hearts and minds in the community, and impressing the program's national administrators who make those all-important funding decisions.

Whether it's helping establish Project Access, a new program that helps the uninsured gain access to health specialists; helping Integrated Refugee and Immigrant Services assess the health needs of new refugees and develop interventions; or designing a method to evaluate the progress made on Mayor DeStefano's Teen Pregnancy Prevention Council, Yale's clinical scholars are collaborating with community members to address their neighbors' health needs in the hope of changing their circumstances. If their work proves to be valuable beyond New Haven, so much the better.

"At the end of our lives and careers, to just look back on a big curriculum vitae would be a shame," Krumholz says. "We should strive to leave a legacy of better health in the community." **YM**

Jennifer Kaylin is a writer in New Haven.



Peter Schulam



Richard Edelson



Melissa Gafe



Tamas Horvath



Gerald Shulman

New urology chair named

PETER G. SCHULAM, M.D., PH.D., was named chief of the Department of Urology at Yale-New Haven Hospital and chair of the department at the School of Medicine in January. Urology, previously a section within the Department of Surgery, has recently been elevated to departmental status.

Schulam comes to Yale from the Ronald Reagan Medical Center at UCLA, where he was vice chair of urology, chief of the division of endourology and minimally invasive surgery, and director of both the kidney stone treatment center and the surgical living kidney donor program.

Schulam has long-standing clinical interests in adrenal disorders; bladder, prostate, and kidney cancer; donor nephrectomy; and kidney stones and kidney reconstruction. He is nationally known for his expertise in minimally invasive surgery and laparoscopic techniques.

A native of New Haven, Schulam received his medical degree as well as his PH.D. in immunology at Baylor College of Medicine in Houston.

He replaces Robert M. Weiss, M.D., the Donald Guthrie Professor of Surgery (Urology), who has led the Section of Urology within the Department of Surgery. Weiss will continue his laboratory research and his active urology practice.

National Physician of the year

RICHARD L. EDELSON, M.D., '70, chair and the Aaron B. and Marguerite Lerner Professor of Dermatology, was one of five physicians to receive a National Physician of the Year Award from Castle Connolly Medical Ltd. in March. Edelson is an internationally recognized pioneer in the research and treatment of cutaneous T-cell lymphoma (CTCL), a cancer affecting the skin. He identified and characterized this cancer, and his research group played a central role in deciphering the basic properties of CTCL cells in order to develop effective therapies. Edelson, who served as director of the Yale Cancer Center, received a Clinical Excellence Award. Castle Connolly Medical Ltd. publishes guides to the best doctors in the United States.

Edelson developed extracorporeal photochemotherapy (ECP) for CTCL patients in clinical trials at Yale Cancer Center. ECP, the first FDA-approved selective immunotherapy for cancer, has been used more than 3 million times worldwide to treat CTCL, organ transplant rejection, and graft-versus-host disease, the major complication following bone marrow transplantation.

Edelson, who served as director of the Yale Cancer Center, received the Clinical Excellence Award at a ceremony in March. Castle Connolly Medical Ltd. publishes guides to the best doctors in the United States.

Historical librarian appointed

MELISSA J. GRAFE, PH.D., was named the John R. Bumstead Librarian for Medical History at the Cushing/Whitney Medical Library last year. Gafe replaces Toby A. Appel, PH.D., M.L.S., who retired in 2010. Gafe, whose doctorate is in the history of medicine, comes to Yale from Lehigh University, where she was the humanities librarian. For her doctoral research at Johns Hopkins she specialized in 18th-century American medical practice, but she also worked with rare books and special collections at the Historical Collection for the Institute of the History of Medicine.

Among her current projects is Yale's participation in the Medical Heritage Library, an effort by leading medical libraries to make rare books accessible online. Collections from Yale, Columbia, Harvard, Johns Hopkins, the National Library of Medicine, the New York Public Library, and other institutions are being digitized and posted online.

"I see my job as working with researchers, students, faculty, and anyone who is interested in the history of medicine and our collections, and helping to bring forth new knowledge," said Gafe, who oversees a staff of four full-time employees, one part-time employee, and three part-time student hires. "We're here to preserve the collection for future generations. We're here to make it accessible either through digital resources or blogs or the exhibitions and classes that we do. We're here to help our patrons."

Two Yale scientists were among 11 to receive Laureate Awards in November from the Endocrine Society, the largest organization devoted to research on hormones and the practice of endocrinology. According to the society, the awards represent the pinnacle of achievement in the field of endocrinology.

Tamas L. Horvath, D.V.M., PH.D., the Jean and David W. Wallace Professor of Comparative Medicine and professor of neurobiology and of obstetrics, gynecology and reproductive sciences, received the Ernst Oppenheimer Award. This award recognizes meritorious accomplishments by a young investigator in the field of basic or clinical endocrinology.

Gerald I. Shulman, M.D., PH.D., the George R. Cowgill Professor of Physiological Chemistry, professor of medicine and of cellular and molecular physiology, and a Howard Hughes Medical Institute investigator, will deliver the Clinical Investigator Award Lecture at the society's annual meeting in June. The award acknowledges major contributions to clinical research related to the pathogenesis, pathophysiology, and treatment of endocrine diseases.

Daniel A. Colón-Ramos, PH.D., assistant professor of cell biology, received the Early Career Award for Public Engagement with Science at the annual meeting of the American Association for the Advancement of Science in Vancouver in February. The award recognizes his work with the nonprofit organization CienciaPR, a website for educators and professionals interested in science and Puerto Rico. The award, established in 2010, is given once a year to an



Daniel
Colón-Ramos

John Krystal

Steven Marans

Michael
Nathanson

Stanley
Rosenbaum

Elisabetta Ullu

early-career scientist or engineer who demonstrates excellence in contributions to public engagement with science activities.

Guadalupe Garcia-Tsao, M.D., professor of medicine (digestive diseases), is the new president-elect of the American Association for the Study of Liver Diseases. Garcia-Tsao is a staff physician at the VA Connecticut Healthcare System, where she is chief of the Section of Digestive Diseases and program director of the Hepatitis C Resource Center. She is also director of the Clinical Core of the NIH-funded Liver Center at Yale. Garcia-Tsao earned her medical degree from the Universidad Nacional Autónoma de México and completed her internal medicine residency and gastroenterology fellowship at the Instituto Nacional de la Nutrición in Mexico City. She completed her training in hepatology at Yale and joined the faculty in 1989.

Linda S. Godleski, M.D., associate chief of staff for education at the VA Connecticut Healthcare System in West Haven and associate professor in the Department of Psychiatry, received the 2010 David M. Worthen Award for Career Achievement in Educational Excellence in October. The award recognizes an employee of the Veterans Health Administration who has made contributions of national significance to education in the health professions.

John H. Krystal, M.D. '84, HS '88, the Robert L. McNeil Jr. Professor of Translational Research and chair of the Department of Psychiatry, was installed as president of the American College of Neuropsychopharmacology in December. He will serve a one-year term, studying the neurobiology and treatment of psychiatric disorders. Krystal is a pioneer in translational neuroscience, which is the effort to link concepts and approaches arising from basic brain research to the study of the neurobiology and treatment of psychiatric disorders. He has applied this strategy to develop and test new approaches to treating schizophrenia, PTSD, alcoholism, and depression. Krystal also directs Yale's Center for the Translational Neuroscience of Alcoholism, which is funded by the National Institute on Alcohol Abuse and Alcoholism, and he is a member of the National Advisory Council on Alcohol Abuse and Alcoholism. He is also a member of the Institute of Medicine of the National Academies.

Steven Marans, M.S.W., PH.D., Harris Professor of Child Psychiatry in the Child Study Center and director of the National Center for Children Exposed to Violence / Childhood Violent Trauma Center at Yale, was appointed in October to the U.S. Attorney General's National Task Force on Children Exposed to Violence. The task force is part of the Defending Childhood Initiative, whose goals are prevention of children's exposure to violence as victims and witnesses; reduction of negative aftereffects on children exposed to violence; and development of better understanding and increased awareness of this

issue. The task force will identify promising practices, program implementation, and community strategies to prevent and respond to children's exposure to violence.

Steve Martino, PH.D., associate professor of psychiatry, was appointed chief of psychology for the VA Connecticut Healthcare System in December. The VA's Psychology Service has 49 psychologists on staff; it comprises two predoctoral training programs in West Haven and Newington; clinical and research postdoctoral training programs; and opportunities for research, education, and national service. Martino's research interests include motivational interviewing, clinician training strategies, the science of dissemination and implementation, technology-based approaches to therapy, and curriculum evaluation.

Scott J. Miller, PH.D., chair and the Irénée du Pont Professor of Chemistry, was recognized as a fellow of the American Association for the Advancement of Science (AAAS) in February. The AAAS cited Miller's "visionary approach to catalysis that has resulted in new types of reactivity and unprecedented selectivity in asymmetric synthesis and natural product modification."

Michael H. Nathanson, PH.D., M.D., FW '90, professor of medicine (digestive diseases), section chief (digestive diseases), and director of the Liver Research

Center, began a five-year term as editor of the journal *Hepatology*.

Stanley H. Rosenbaum, M.D., professor of anesthesiology, of medicine (pulmonary), and of surgery (trauma), received the Lifetime Achievement Award from the Society of Critical Care Anesthesiologists. The award presentation took place at the society's annual meeting in Chicago in October.

Elisabetta Ullu, PH.D., professor of medicine (infectious diseases) and of cell biology, was named the winner of the American Society for Biochemistry and Molecular Biology's (ASBMB) inaugural Alice and C.C. Wang award. Ullu received the award for her laboratory's work with the protozoan parasite *Trypanosoma brucei*, which causes African sleeping sickness, to uncover a novel mechanism of gene silencing known as RNA interference. The award honors Ching Chung ("C.C.") Wang, PH.D., professor of pharmaceutical chemistry at the University of California, San Francisco. Ullu received her PH.D. from the University of Rome in 1973 and took a position at Yale in 1984. Ullu will receive her award in April during the Experimental Biology 2012 conference in San Diego, where she will deliver the award lecture. The award consists of \$35,000 for use by the recipient's research laboratory, a plaque, and travel expenses for the recipient to attend and speak at the ASBMB annual meeting.

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Student health project offers blood screening

Yale students provide tests, referrals, and advice on handling high blood pressure and blood glucose.

On a cold Saturday morning in January, dozens of people gathered in the basement of the Episcopal Church of St. Paul and St. James, near New Haven's Wooster Square. They came for warmth, companionship, free clothing, and the weekly food pantry run by Loaves and Fishes.

Some also came for free blood pressure and blood glucose screenings provided by Yale students in the health professions. Teams from the School of Medicine, the School of Nursing, and the School of Public Health have been coming to the church for about 10 years as part of the Neighborhood Health Project (NHP). The mission of the NHP is simple—under the tutelage of volunteer physicians, the

students offer screenings and advice about nutrition and exercise. "A lot of our patients have high blood sugar and high blood pressure," said Sarah Aspinwall, a public health student who's one of four clinic coordinators. "A lot of that is a diet and exercise issue." Last year the clinic also gave free flu shots to almost 100 people, with vaccine provided by New Haven's health department.

The screenings are the easy part. If the tests reveal a problem, the students refer their patients to a source of free or low-cost health care in New Haven. That's the hard part—many of their patients are unemployed or have limited resources.

One of the patients that morning was 36 years old and recently arrived from Mexico. He hadn't worked in two weeks; before that he had worked intermittently in remodeling. He was worried about his frequent urination and recent weight loss. Carrie A. Redlich, M.D. '82, HS '86, FW '87, M.P.H. '88, professor of medicine (occupational medicine), and this week's preceptor, had questions for the patient: When was the last time you saw a doctor? How much weight have you lost? Why are your pants so loose? Does anyone in your family have diabetes?

First-year physician associate student Lauren Monoxelos had already

done the screenings—the patient's results were off the charts. Jessica Wang, a second-year medical student and one of the clinic coordinators, repeated the tests. Still off the charts. There's only so much the staff can do at a screening clinic, so Redlich made an appointment for the patient at HAVEN, a student-run free clinic on Grand Avenue.

This case offered a lesson beyond the mechanics of strapping a blood pressure cuff on a patient's arm. "For me one of the biggest shockers in terms of interfacing with the medical system has been that when you're studying it, you think the low-income population will just sign up for Medicaid and they'll get care," said Danielle Correia, a second-year public health student and clinic coordinator. "It seems very simple on paper, but when you're actually in that context you realize the sheer complications of what signing up for Medicaid involves. What if they're just above the poverty line but still very low-income?"

Then there are the lessons in bedside manner. "The thing that we sometimes underestimate is how important it is to get comfortable with patients," said NHP faculty advisor Jeffrey R. Bender, M.D., HS '83, the Robert I. Levy Professor of Medicine (Cardiology) and professor of immunobiology. "This is a great way for students to start getting a sense of how to talk to people, make them immediately comfortable, and engender trust from the outset."

"It's really rewarding," said Wang. "We are helping people get access to health care who would otherwise have a very hard time doing so."

—John Curtis



JOHN CURTIS

Maureen Wright, a student pursuing dual degrees in public health and the Physician Associate Program, took a patient's blood pressure at the Neighborhood Health Project in January. Students in medicine, nursing, public health, and the PA program also do blood glucose screenings and offer advice about diet and exercise.

epidemiologist who traced the source of a cholera epidemic in London in 1854. Michael L. Schwartz, Ph.D., assistant dean for curriculum and associate professor of neurobiology, concluded the series in February with a discussion of Oliver Sacks' *The Man Who Mistook His Wife for a Hat*.

The salons came out of a discussion among faculty members about the relationship between literature and medicine. "Somebody said something and a light bulb went off," said Nancy Angoff, M.P.H. '81, M.D. '90, HS '93, associate dean for student affairs. "We started thinking about books that fit with certain courses. We started thinking biochemistry, we started thinking anatomy, we started thinking cell bio. We put together a committee of students and faculty and came up with these choices." Another impetus was a program launched this academic year—the medical school provided iPads to all students—which allows students to receive free electronic versions of the books.

First- and second-year students were invited to sign up for the salons—the dual goals were to integrate the humanities into students' medical education and to provide a relaxed and informal way for students and faculty to interact.

That night at the Fikrigs' home, Friedland led the discussion of *The Plague*. "This is about death and dying, and the choices that we make at personal, professional, and community levels," Friedland said. "To me it has been a textbook of the HIV/AIDS epidemic, better than any journal article I could read."

One student, Rebecca Vitale, said afterward that the discussion provided a link between the book and modern epidemics. "It talks about the medical profession in the way that it functions in a time of crisis," she said. "That is a piece of medicine that you never talk about."

At the final session a few weeks later at Schwartz's home in Guilford, the discussion veered from the Sacks book to discussions of neurology and to lessons from the accumulated wisdom of



JOHN CURTIS (2)

TOP Gerald Friedland, who observed the HIV/AIDS epidemic firsthand, led the discussion of *The Plague*.

BOTTOM In February Michael Schwartz (left) hosted a discussion of *The Man Who Mistook His Wife for a Hat* with first-year students and neurology professors David Greer and Serena Spudich.

the faculty present. Schwartz and the students were joined by David M. Greer, M.D., vice chair of neurology and the inaugural Dr. Harry M. Zimmerman and Dr. Nicholas and Viola Spinelli Associate Professor of Neurology, and Serena Spudich, M.D., associate professor of neurology.

"Could this book have been written now?" first-year Amanda Wallace asked of the book, written in 1985.

"We thought this is the way medicine was at the time," answered Spudich.

"It's a historical piece," added Greer. "We have treatments now. Now we have a ton of stuff we can do. I don't think you could write this now."

—J.C.

Salons bring faculty and students together for wine, books, and conversation

A few days after their return from winter recess, 10 second-year students piled onto a bus in front of the Sterling Hall of Medicine for the 20-minute trip to the Guilford home of Erol Fikrig, M.D., Waldemar Von Zedtwitz Professor of Medicine, Howard Hughes Medical Institute investigator, and professor of epidemiology and public health and of microbial pathogenesis; and of Margaret Fikrig, M.D., assistant professor of medicine. Both specialize in infectious diseases. They were joined by Gerald Friedland, M.D., former director of the AIDS Program at Yale and professor of medicine (AIDS) and of epidemiology (microbial diseases). Friedland has served on the front lines of three epidemics—HIV/AIDS in New York City, HIV/AIDS in South Africa, and extensively drug-resistant tuberculosis in South Africa.

As the group sipped wine and beer in the Fikrigs' living room, the talk turned to the evening's theme—*The Plague*, Albert Camus' 1947 novel about an outbreak of bubonic plague in an Algerian seaport.

The literary salon was the second in a series of four. In December Thomas P. Duffy, M.D., professor of medicine (hematology) led first-year students in a discussion of Rebecca Skloot's history of HeLa cells used widely in medical research, *The Immortal Life of Henrietta Lacks*. In January Warren A. Andiman, M.D., FW '77, professor of pediatrics (infectious diseases) and of epidemiology (microbial diseases), hosted a discussion of Steven Johnson's *The Ghost Map*—the story of John Snow, a pioneer

A neurologist inspired by his patients

William Gaillard frees his pediatric patients from debilitating or life-threatening conditions.

When Irving S. Cooper, M.D., was perfecting the stereotactic cryosurgery to treat Parkinson disease in the late 1950s, William D. Gaillard, M.D. '85, was spending summers down the block in Tannersville, N.Y. Developer of the first surgical procedures for Parkinson disease, a pioneer in cryosurgery, stereotactic surgery, and functional neurosurgery, as well as a close family friend, Cooper invited Gaillard to spend a summer during college working with him.

"He was bright and innovative, as well-versed in literature as he was in medicine. My interest in neuroscience stems from his influence," said Gaillard,

who chose pediatric neurology instead of surgery. Gaillard, chief of the Division of Epilepsy, Neurophysiology, and Critical Care Neurology at Children's National Medical Center in Washington, D.C., felt surgery wouldn't allow time for a family, which now includes his 19-year-old son, 16-year-old daughter, and his wife, Adelaide S. Robb, M.D., a principal investigator at Children's National Medical Center. Gaillard proudly describes Robb as "the best pediatric psychopharmacologist east of the Mississippi River. And west."

Gaillard's work, like Cooper's, helps free patients from debilitating or life-threatening neurological conditions. As director of the comprehensive pediatric epilepsy program at Children's National, director of the Intellectual and Developmental Disabilities Research Center Imaging Core, associate director of the Center for Neuroscience Research at Children's Research Institute, and professor of neurology at George Washington and Georgetown universities, Gaillard focuses on difficult-to-control seizures.

In a field that can take a heavy emotional toll, Gaillard draws inspiration from his patients and their parents. The pediatric neurologist tells the story of a 13-year-old patient

with Rasmussen encephalitis, a rare inflammation of one hemisphere of the brain that causes severe seizures, cognitive disabilities, paralysis on one side of the body, and possibly death. If medications don't control the seizures, the only cure is removal of the affected hemisphere of the brain. Typically surgery is not recommended if it will affect movement, memory, or language—functions Gaillard describes as "essential to being human." But even after falling into a coma, the girl was seizing uncontrollably.

"We didn't have any options if we wished to save her life," Gaillard said. So he recommended removal of the left hemisphere of the young girl's brain.

The surgery cured her seizures—but as expected, she couldn't speak or understand. She was depressed, using a wheelchair, and taking numerous medications. A year after surgery, during which Gaillard managed the treatment of a movement disorder the surgery had caused, the once-bright and outgoing girl could speak only one word. "Six months later," Gaillard said, trying to control his emotion, "she walked into my office and said, 'Hello, Dr. Gaillard.'"

Still Gaillard's patient, the young woman now speaks and walks and is back in school; she no longer takes either seizure medications or anti-depressants. Gaillard gives all the credit to the patient and her mother, who encouraged her daughter when



BILL JENNIE

William Gaillard treats pediatric patients who have seizures that are difficult to control. His imaging research allows physicians to determine, noninvasively, whether seizures are located in the areas of the brain that control language.

even the girl's schoolteachers said they anticipated no further improvement. She worked tirelessly for her daughter," he said.

Due in part to Gaillard's imaging research, physicians can now determine noninvasively whether seizures are located in the areas of the brain that control language. Among the more than 100 studies Gaillard has led or co-authored, many in collaboration with the National Institutes of Health, he is most excited about his research on using functional magnetic resonance imaging as a replacement for invasive methods of brain mapping. Imaging can reveal which portions of a patient's brain control language to determine whether surgery is a viable option to cure seizures.

Gaillard is quick to explain that he chose pediatrics because "it's more fun." He admires pediatricians' willingness "to play in the sandbox" and "laugh at themselves." For Gaillard, the ability to laugh at himself comes with the ability to "know what you don't know."

"If you really want to take care of someone, it's best if you work closely with others with the skill sets you don't have," he said. Gaillard's own playfulness, not to mention school spirit, is apparent in his bulldog-printed bowtie and e-mails occasionally signed "Boola Boola."

Drawn to medicine by an aunt who was forbidden to go to medical school because "a lady did not take a man's job," Gaillard pursued neurology after a spring spent at University College London's Institute of Neurology at Queen Square. He credits Laura R. Ment, M.D., associate dean of admissions and professor of pediatrics and of neurology, with encouraging his interest in pediatrics and child neurology, and Richard H. Mattson, M.D., professor emeritus of neurology, with encouraging his interest in epilepsy.

"What's really rewarding is to try to help a child have a normal life," Gaillard said.

—Sonya Collins

An alumnus' journey: doctor, inventor, and a founder of the UCSD medical school

When Robert Hamburger, M.D. '51, HS '54, was a newly minted University of North Carolina graduate, he planned to become a journalist. Although his career took a very different path—one that led him to become a physician, inventor, and medical school founder—Hamburger never lost his ear for the telling anecdote or colorful quote.

On the subject of deciding to become a doctor, he said, "I used to baby-sit for our family doctor's two kids. I would sneak into his office to look at his books, mostly to look at the sex pictures, but it left me with a genuine interest in medicine."

On religion: "During my first interview at the medical school, the interviewer asked me about my religion, and I told him I was an atheist. Knowing I'd served in the war (Hamburger was a P-38 pilot during World War II), he said, 'There are no atheists in foxholes.' I told him that was a load of crap; I became an atheist when I saw what human beings do to each other."

And on the death of two of his three daughters from cancer: "It was very tough. I've saved a large number of very sick patients in my career, but I couldn't save my own kids. I have quite a strong ego, but that gave me a good sense of humility."

Hamburger is best-known for discovering the relationship of allergy inheritance and IgE (one of the five immunoglobulins humans have in their bodies) in mothers and infants, inventing a high-efficiency particulate filter to aid children with asthma, and

helping to launch the University of California School of Medicine in La Jolla. He credits his training at Yale, especially studying under the Yale system, for his success on all these fronts. The Yale approach, with its emphasis on research-based medicine in a noncompetitive environment, taught Hamburger the importance of questioning conventional wisdom and insisting on scientific evidence to support one's hunches and beliefs.

"It became my model, the model that I operated on," he said. "I would drive people crazy when I'd say, 'That sounds kind of like hearsay. Is there any evidence to back it up?' But that's how I think; that was my training."

Hamburger applied to the School of Medicine at the urging of his sister Evelyn, who had been accepted by the Yale School of Nursing. Without the support of his wife, Sonia, to whom he's been married for 67 years, he wouldn't have made it through, he said. (Her support when he was missing in action during World War II also helped his parents get through that crisis.) After he completed his residency at Yale and at Strong Memorial Hospital in Rochester, N.Y., he became the chief of pediatrics at Milford Hospital in Connecticut.

"I was broke. I owed everybody money, so I worked 16- to 18-hour days, seven days a week, to get out of debt." After four years, Hamburger returned to Yale to become a postdoc in the microbiology department. Six months later, in 1964, he followed his division chief, David M. Bonner, PH.D., to the University of California, San Diego (ucsd). The timing was fortuitous, as ucsd was then launching a medical school and Hamburger was asked to sit on the advisory committee.

(Yale connections to ucsd are strong and deep. Former Dean Gerard N. Burrow, M.D. '58, HS '66, served as dean of the medical school there from 1986 to 1992. Nobel laureate George E. Palade, M.D., left Yale in 1990 to become the first dean of scientific affairs at ucsd. The current dean of



Robert Hamburger is best-known for discovering the relationship between allergy inheritance and an immunoglobin in mothers and infants. He was also a founder of the medical school at the University of California, San Diego.

MELISSA JACOBS

the medical school at UCSD is David A. Brenner, M.D. '79, HS '82.

Drawing on his experience at Yale, Hamburger recommended the aspects of his Ivy League education he valued most, while rejecting "the stuffiness and formality." That meant no competition and no grades at the new school. The school should be small, and students should be required to complete a thesis based on original research in order to graduate.

His suggestions were well-received, and Hamburger was encouraged to stay on, first as assistant dean for faculty and curriculum affairs, and later as head of the school's Pediatric Immunology and Allergy Division and as assistant dean of the medical school. He became a professor emeritus in 1990.

Throughout his career Hamburger's work has focused on allergic diseases and their impact on children's health.

In the late 1990s he developed an allergen detector system to help children with asthma sleep more soundly. "Sunbeam bought the rights, but then they went belly up," he said. "I still have samples of that device in my closet. It was the one effort in my life to try to get rich."

More successful was his collaboration with Nestlé, the Swiss food and confectionery company, which asked Hamburger to serve on its advisory board to help promote its baby formula. Hamburger said he would participate only if the company helped him spread the word about the benefits of breast feeding, which include later resistance to allergies. "Our message was 'breast is best, but if you can't nurse or you need to supplement, use Nestlé baby formula.'"

Now well into his retirement, Hamburger has returned to his first vocational love—writing. He and his

granddaughter Toya are collaborating on a collection of short stories that will constitute his autobiography. Tentatively titled *Autobiography: A Long Life in Short Story*, it is about 25 pages long, but promises to grow much longer.

—Jennifer Kaylin

Familiar Faces

Do you have a colleague who is making a difference in medicine or has followed an unusual path since leaving Yale? We'd like to hear about alumni of the School of Medicine; Physician Associate Program; and the medical school's doctoral, fellowship, and residency programs. Drop us a line at ymm@yale.edu or write to Faces, Yale Medicine, 1 Church Street, Suite 300, New Haven, CT 06510.



J. Norman Coleman



Ross Tonkens



Ronald Vender



Gerard Doherty



Emma Webber
Adam Kaye



Philip Butler
Carolyn Goldberg

1970s

J. Norman Coleman, M.D. '70, received the 2011 Homeland Security Medal, a Samuel J. Heyman Service to America Medal presented annually by the Partnership for Public Service to honor excellence in federal civil service. This medal recognizes federal employees for significant contributions to the nation in activities related to homeland security. Coleman, associate director of the Radiation Research Program at the National Cancer Institute of the NIH, developed a blueprint for dealing with the health consequences of a radiological or nuclear incident.

Harry Romanowitz, M.D. '73, clinical assistant professor in the Department of Pediatrics, received Sacred Heart University's College of Health Professions 2011 Community Partner Award. The award is given in recognition of "exceptional collaboration to further the educational goals and mission of the college." His teaching and mentoring of nurse practitioner and nursing students through the first urgent care pediatric practice in Fairfield County (which he founded in 2007) provides outstanding clinical training for students. Romanowitz served for 20 years as Stamford Hospital's chair of pediatrics and maintains his consultation practice.

Ross Tonkens, M.D. '74, has been appointed head of the American Heart Association's (AHA's) new Science and Technology Accelerator division. He is charged with identifying and vetting potentially "game-changing" scientific innovations aligned with

AHA's core mission—to foster healthier lives free of cardiovascular diseases and stroke—that are insufficiently developed to attract private equity funding, and with accelerating their translation into products that improve real-world cardiovascular outcomes.

Ronald J. Vender, M.D. '77, HS '80, FW '82, chief medical officer of Yale Medical Group and a nationally recognized gastroenterologist specializing in therapeutic endoscopy and inflammatory bowel disease, was appointed vice president of the American College of Gastroenterology (ACG). The mission of the ACG is to advance the medical treatment and scientific study of gastrointestinal disorders.

1980s

Gerard M. Doherty, M.D. '86, has been appointed chair of the Department of Surgery at Boston University School of Medicine and chief of surgery at Boston Medical Center effective January 1. Doherty was previously at the University of Michigan, where he was N.W. Thompson Professor of Surgery, vice chair of the Department of Surgery, and section head of General Surgery. Doherty's clinical focus is endocrine oncology; it comprises diseases of the thyroid, parathyroid, endocrine pancreas, and adrenal glands, as well as the surgical management of multiple endocrine neoplasia syndromes. His research interests include a series of projects to regenerate parathyroid cells for replacement of lost tissue in people who are permanently hypoparathyroid.

1990s

Joshua Broder, M.D. '99, who published *Diagnostic Imaging for the Emergency Physician* (Elsevier 2011), was announced as the 2011 winner of the PROSE Award in Clinical Medicine. The PROSE Awards are the American Publishers Awards for Professional and Scholarly Excellence. Broder is associate professor and residency director in emergency medicine at Duke University Medical Center.

2000s

Jeremy Allen, M.M.Sc., PA-C '07, and **Maria Teresa Trigg, M.M.Sc., PA-C** '09, were married on October 22 in the Great Smoky Mountains of North Carolina. Allen works as a physician associate in emergency medicine and Trigg is in private practice in Connecticut.

Eric Arzubi, M.D. '08, HS '11, received the Resident Physician Community Service Recognition Award (CSRA) from the Association of American Medical Colleges in November. The CSRA is given to one resident around the country each year and recognizes contributions that improve the communities surrounding the resident's training institution. Arzubi, a fellow in adult psychiatry at the School of Medicine, was honored for helping to organize and lead a mental health advocacy coalition in Connecticut, the Children's Committee of the Keep the Promise Coalition. The coalition's primary goal is the expansion and enhancement of school-based mental health services.

Adam H. Kaye, M.D. '09, M.B.A. '09, and **Emma J. Webber** were married in Guilford, Conn., in

September. Among the wedding party were **Christopher Spock, M.D.** '09, and **David Gimbel, M.D.** '10. Kaye is a radiology resident at the Hospital of the University of Pennsylvania. Webber is pursuing a career in environmental public policy.

David LaBorde, M.D. '04, M.B.A., is the co-founder and CEO of Iconic Data, which offers physicians a tool for managing patient data across facilities. Iconic Data was recently selected as a part of the inaugural class of Healthbox, a Sandbox Industries business incubator funded by Blue Cross and Blue Shield. LaBorde spent six years in neurosurgery and previously worked in management consulting at McKinsey & Co. and in health care investment banking at Goldman Sachs and Merrill Lynch.

2010s

Philip Butler, M.D. '10, and **Carolyn Goldberg, M.D.** '10, were married in October in Anguilla in the British West Indies. The couple completed residencies at the University of Wisconsin Hospital and Clinics in Madison—she in plastic and reconstructive surgery, he in diagnostic radiology. In November Butler began a residency in radiology at Brigham and Women's Hospital in Boston.

SEND ALUMNI NEWS TO

Claire M. Bessinger, *Yale Medicine*, 1 Church Street, Suite 300, New Haven, CT 06510, or via e-mail to claire.bessinger@yale.edu

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In memoriam

Malcolm Bagshaw, M.D. '50, one of the world's foremost experts in radiation therapy, most notably in developing new applications of radiation therapy for prostate cancer, died on September 18 at home in Palo Alto, Calif., after an extended illness. He was 86. Bagshaw was the former chair of the departments of radiology and radiation oncology at Stanford University School of Medicine. He completed his residency in radiology at the University of Michigan and joined Stanford in 1956. He was appointed head of the Division of Radiation Therapy in 1960 and became chair of the Department of Radiology in 1972. Bagshaw received the 1996 Charles F. Kettering Prize, awarded by the General Motors Cancer Research Foundation, for his role in improving prostate cancer treatment.

John D. Baxter, M.D. '66, HS '68, whose early work in cloning and recombinant protein production provided the basis of the biotechnology industry, died of cancer on October 5 in San Francisco. A native of Lexington, Ky., he was 71. At the time of his death Baxter was director of the Genomic Medicine Program of the Methodist Hospital Research Institute in Houston. By cloning the growth hormone family of genes and through subsequent studies, Baxter made major contributions to the understanding of growth and development, and established a model for advances in developmental biology. That model led to the creation of the first synthetic drug to stimulate growth in children of abnormally short stature and the discovery of drugs to increase milk production in dairy cows. Baxter and a colleague then became the first to show what a nuclear receptor looks like when it is binding to a hormone—a breakthrough that led to new structures in drug design. Baxter was named to the National Academy of Sciences in 2003. He also received an Outstanding Investigator Award from the Howard Hughes Medical Institute.

Harold O. Conn, M.D., FW '53, HS '56, a world-renowned hepatologist, author, and pioneer in the basic understanding and treatment of advanced liver disease, died on October 9 in Pompano Beach, Fla. He was 85. Conn, a 50-year faculty member at the School of Medicine, wrote more than 400 peer-reviewed articles about hepatic encephalopathy. One of Conn's greatest professional accomplishments was *The Histopathology of the Liver*, published in 1993, which he wrote with Gerald Klatzkin, M.D. It was his last major project until he contracted normal-pressure hydrocephalus (NPH). Erroneously diagnosed for 10 years as Parkinson disease, NPH robbed him of his ability to walk or think clearly until the correct diagnosis was made. Following a remarkable remission after brain surgery at age 78, Conn became a spokesperson for NPH awareness.

We have also received word of the passing of the following alumni and faculty:

Mary North Allen, MED '45, a photographer, died on November 26 at her home in Madison, Wis. Allen was 92. After her graduation from Mills College in 1941, she attended Yale School of Medicine for one year.

Carl E. Andrews, M.D. '44, died on September 12 in Fort Pierce, Fla. He was 91. Andrews was a retired general surgeon who had practiced in West Palm Beach for 33 years.

Graeme C. Baker, M.D., HS '76, a plastic surgeon, died on October 2 in Erie, Pa. He was 73.

Dennis P. Bekeny, M.D., HS '72, of Hamden, Conn., died on October 6 at Smilow Cancer Hospital at Yale after a brief illness. Bekeny was a pediatrician in the New Haven area for 36 years.

Donald Smythe Childs Jr., M.D. '42, a retired radiologist, died on December 10 in Rochester, Minn. He was 95.

George M. Goza Jr., M.D., HS '56, died at home on October 19 in Rice Lake, Wis. A retired internist and cardiologist, Goza was 85.

Robert H. Groves Sr., M.D. '56, died on October 31 in Rochester, Mich. He was 81.

James W. Innes, M.D., HS '63, FW '64, died on August 29 in Riverside, Conn. He was 79. Innes practiced internal medicine and gastroenterology.

William H.O. Kiekhoffer, M.D. '51, a retired associate professor of obstetrics and gynecology at the University of Wisconsin Medical School, died on October 13 in Providence, R.I. He was 89.

Ruth H. Kotler, PA-C '88, a neurosurgical physician associate at the University of Connecticut Medical Center, died at home in Avon, Conn. on November 5 of breast cancer. She was 47.

Cheryl E. Lemmons, M.D., HS '87, a surgeon and geriatric psychiatrist, died in Onset, Mass., on August 6 after a short illness.

Francis B. Maraist, M.D., HS '55, a retired general surgeon, died on November 1 in Tequesta, Fla. He was 85.

Robert N. Margolis, M.D., HS '65, associate clinical professor of orthopaedics and rehabilitation, died in Woodbridge, Conn., on September 21. He was 78. Margolis served as associate chief of orthopaedics at the Hospital of Saint Raphael, chief of orthopaedics at the VA Connecticut Health-care System in West Haven.

Nessan McCann, M.D., HS '66, died on September 14 in St. Augustine, Fla. He was 88.

K. Alvin Merendino, M.D. '40, PH.D., a retired professor of surgery at the University of Washington Medical Center, died on September 10 in Seattle. He was 96. Merendino performed the first open-heart surgery on the West Coast and helped

establish a renal transplantation program in Seattle.

Richard Neubauer, M.D. '76, died on October 31 at his home in Stuckagin, Alaska, from complications of primary amyloidosis. Neubauer was 61. Born in Queens, N.Y., he served in the Indian Health Service in Wyoming before moving to Alaska.

John A. Ogden, M.D. '68, HS '73, died in Atlanta on August 31. He was 68. Ogden served as chair of orthopaedics at the School of Medicine from 1978 to 1983 and later as clinical professor of orthopaedics at Emory University.

Thomas R. Pellegrino, M.PHIL. '71, M.D., HS '77, died at home in Hampton Roads, Va., on November 17 after a short illness. At the time of his death, Pellegrino was associate dean for education at Eastern Virginia Medical School.

Jeffrey Robbins, M.D., HS '68, a retired otolaryngologist, died on July 13 at his home in Bristol, Tenn. He was 69.

Ben A. Shaver Jr., M.D. '56, a retired pediatrician, died on November 23 in Potomac, Md. He was 81.

Don H. Smith, M.D. '70, a prison psychiatrist, died on October 12 in Port Washington, Wis. He was 66. Smith was a junior research fellow in the Yale Arbovirus Research Unit during his years at the School of Medicine.

Martin B. Vita, M.D. '50, a retired pediatrician, died on September 18 in New York City. He was 83.

Douglas A. Wegner, M.D., HS '94, a hand surgeon, died suddenly of a heart attack on August 5 in Tucson, Ariz., while running in Sabino

SEND OBITUARY NOTICES TO
Claire M. Bessinger, Yale Medicine,
1 Church Street, Suite 300,
New Haven, CT 06510, or via e-mail
to claire.bessinger@yale.edu

Second-years save the Yale system!

Egregious violations of the Yale system—mandatory class attendance and exams—drive a student to the breaking point in the Class of 2014's Second Year Show, *The iPocalypse*, presented in February. The heroine, played by Juliet Fraser, finds her dreams of a career in neurosurgery thwarted on Match Day. "Podiatry!?" she screams. All ends well, however, when students put an end to a scheme by an evil consultant played by Samantha Wang (who co-directed the show with Conor Grady). Left to right, Alex Kula, Kelsey Loeliger, Grady, and Fraser appear in a scene from the show.



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“A gentle man”

Arthur Ebbert Jr.'s friends
and colleagues recall his
graciousness and unfailing
courtesy.

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"A gentle man"

Arthur Ebbert Jr.'s friends and colleagues recall his graciousness and unfailing courtesy.

By Natalie Villacorta

Yale doctors around the world

Since the days of Peter Parker, alumni have brought health care to underserved regions of the world.

By Jenny Blair, M.D. '04

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ON THE COVER This portrait of Arthur Ebbert by William F. Draper hangs in the Jane Ellen Hope Building as a tribute to the man who served as the medical school's first deputy dean.

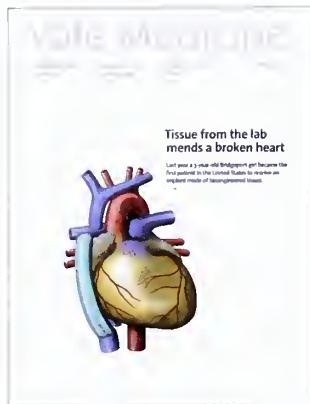
Photo by Carl Kaufman

THIS PAGE An aerial view of the medical school campus as it appeared in the 1960s during Arthur Ebbert's tenure as deputy dean.

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Our new website is up and running—and the feedback has been wonderful! Visit us at yale-medicine.yale.edu and peruse the newest issue or issues going back to 1998.

CORRECTION

An alumni note in the Spring 2012 issue incorrectly stated that Carolyn Goldberg, M.D. '10, and Philip Butler, M.D. '10, completed residencies at the University of Wisconsin. Goldberg completed an internship in plastic and reconstructive surgery there and will start an anesthesiology residency at Brigham and Women's Hospital next year. Butler is a resident in radiology at Brigham and Women's Hospital in Boston.

Tom Forbes remembered

When I was in medical school one of our anatomy professors, Tom Forbes, taught an optional course about the history of anatomy. It was held once a week at lunch time. Professor Forbes would bring wonderful butter cookies that his wife had baked, and we would listen to him talk about Vesalius and the other great anatomists while eating cookies. He would pass around the original anatomy books from the Cushing Collection for us to examine during class. It was one of the real highlights of the first two years of medical school.

*Albert Ungricht, M.D. '82
Salt Lake City*

Kudos for Yale Medicine

Yale Medicine received four awards from the New England chapter of the American Medical Writers Association in January. Will Solimene Awards for Excellence went to Jenny Blair, M.D. '04, for "From Cedar Street to Capitol Hill," Winter 2010; to Jill Max for "Improving the Lot of Women in Medicine," Autumn 2010, and "Medicine and the Military," Spring 2011; and to Colleen Shaddox, for "Is the Physician-Scientist an Endangered Species?," Autumn 2011. Congratulations to all three for their outstanding work.

**In search of ...****YSM class photos!**

The School of Medicine's Alumni Office and the Historical Library are hoping to fill gaps in our collection of class photos. If you have a Commencement or White Coat Ceremony photo for one of the classes listed below, please contact Melissa Gafe, Ph.D., the John R. Bumstead Librarian for Medical History, Cushing/Whitney Medical Library, at 203-785-4354 or melissa.grafe@yale.edu. We will scan and return original photos.

We are looking for images from these classes: 1962, 1965, 1981, 1982, 1983, 1986, 1987, 1988, 2003, 2004, 2006, 2007, 2008, and 2009.

A modest man remembered

Arthur Ebbert Jr., M.D., would by all accounts be embarrassed by the issue of *Yale Medicine* that you hold in your hands. His friends and colleagues remember Ebbert, who died on June 7, as unassuming, gracious, and modest—a man who preferred the background to the limelight. As our writer Natalie Villacorta interviewed people who knew Ebbert, time and again they cautioned that he would have eschewed such attention. We hope, however, that he would have appreciated this acknowledgement of his contributions to the School of Medicine and to this magazine, which he founded in 1953 as the *Alumni Bulletin*.

People remember Arthur Ebbert for who he was as much as for what he did. He seemed to know everything about the school, and everyone knew him and knew they could count on him. “‘Ask Art’ was the motto,” recalled John E. Fenn, M.D. ‘61, HS ‘67, clinical professor of surgery (vascular). “Anybody could approach (him) with any kind of problem, and if he didn’t solve it, he knew how to give you advice to go about seeking a solution.”

Ebbert felt that the school needed a publication that would keep alumni informed of relevant events, including new buildings on campus, advances in medicine and science, and new methods for teaching medical students. From 1953 until 1966 the magazine was an eight-page newsletter; then it adopted the magazine format you see today. In 1986, our current editor in chief, Michael Kashgarian, M.D. ‘58, HS ‘63, FW ‘65, took on that post when Ebbert retired. Although we hadn’t heard the motto “Ask Art,” over the years we did indeed turn to him many times to learn aspects of the history of the medical school. He will be missed.

In this issue we also continue our series on alumni career paths with an article on those who have devoted significant portions of their careers to underserved communities around the world. As it happens, our two alumni profiles in this issue also focus on people who have spent time abroad.

We hope you enjoy our autumn issue.

John Curtis
Editor

SECOND OPINION BY SIDNEY HARRIS



yale medicine

*Alumni Bulletin of the
Yale University School of Medicine
Autumn 2012, Volume 47, No. 1*

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BMS-936558, which was developed by Bristol-Myers Squibb, acts by blocking a protein that tumors use to disable the body's immune system, and represents a new approach to cancer therapy. "We're just at the beginning of a paradigm shift in the treatment of cancer," said Sznol.

Since similar results were seen at all nine centers participating in the trial, Sznol considers it highly unlikely that the drug's effectiveness is a fluke. Scott N. Gettinger, M.D., associate professor of medicine, who recruited lung cancer patients for the trial, said that the response in those patients "opens the door to looking at other solid tumors." Most of his patients had few or none of the side effects often associated with chemotherapy—hair loss, drops in blood-cell counts, altered taste, and profound fatigue. "This is the best-tolerated drug I have ever given to patients with lung cancer," Gettinger said.

The new drug has its roots in the labors of Chen, who was training to be an oncologist in the 1980s. The lack of effective cancer treatments made it a depressing job. "That's why I quit clinical practice," Chen said. He shifted to research, focusing on the role of the immune system in cancer.

For decades scientists have sought to understand why the human immune system sits on the sidelines when cancer invades the body, and how to provoke it to attack cancer cells. Such an approach could target the disease while sparing normal cells, resulting in greater effectiveness and fewer side effects. And because the immune system "remembers" invaders it has encountered, the response to immunotherapy should be long-lasting.

A decade's research by Chen and colleagues at other institutions found that the interactions of certain proteins and receptors allow tumor cells to disable T cells, the immune system's main fighters. The tumor cells, Chen said, take advantage of a mechanism that the body uses to prevent damage

from prolonged immune responses. In 1991 Chen, then at the Mayo Clinic, discovered B7-H1, a protein that can suppress T cells. Nine years later researchers from Harvard Medical School's Dana-Farber Cancer Institute and the University of Kyoto found that B7-H1 binds to programmed death 1 (PD-1), a receptor on the surface of T cells. Scientists renamed the B7-H1 protein, calling it PD-L1 to reflect its role as a binding partner for PD-1. Tissues use PD-L1 to turn off the immune response when it's gone on too long; and, Chen found, PD-L1 is overexpressed in many human tumors.

"Cancer steals this mechanism," said Chen. Cancer triggers an immune response, which sends T cells to attack the tumor. The tumor, in response to signaling molecules from the T cells, expresses PD-L1, which binds to PD-1 and suppresses the T cells. BMS-936558 blocks the PD-1 binding site and keeps PD-L1 at bay.

Tests on tumor samples from the recent trial revealed that tumors that did not express PD-L1 did not respond to treatment, while 36 percent of PD-L1 positive tumors showed a response. That suggests that PD-L1 may serve as a biomarker to identify patients who will benefit from anti-PD-1 drugs. There are side effects of PD-1 blockade—in the current trial, three patients died of drug-related lung inflammation—but Chen thinks that adverse effects can be managed.

Jedd D. Wolchok, M.D., Ph.D., of Memorial Sloan-Kettering Cancer Center, who was not involved in the current trial, said that the new results are encouraging for the potential of immunotherapy in the treatment of

Unleashing the immune system against cancer

A multicenter trial finds a way to thwart cancer's hijacking of a protective immune response.

A multicenter team that included Yale scientists has reported one of the first significant successes in harnessing the immune system to fight cancer. In an early clinical trial of a new cancer drug, the scientists said in a report published on June 2 in the *New England Journal of Medicine*, tumors regressed significantly in between 20 and 33 percent of patients with non-small-cell lung cancer, kidney cancer, or melanoma.

The response in lung cancer patients was remarkable, said Mario Sznol, M.D., professor of medicine, because immunotherapies had generally been effective only in melanoma and kidney cancers. (For reasons that are not fully understood, the small number of patients with colorectal or prostate cancer in the trial—which had 296 patients—did not respond to the drug.) The patients in this trial had already received heavy doses of therapies that likely depleted their immune systems. If administered to patients with less prior treatment, the drug should be even more effective, said Lieping Chen, M.D., Ph.D., professor of immunobiology, of dermatology, and of medicine. The study, said Sznol, also found consistent, durable regression of cancers: 20 of 31 responses that were tracked lasted for at least a year—a result rarely observed with traditional chemotherapy or forms of therapy that target specific characteristics of tumors. The drug,

et cetera...



JERRY DOMIAN

Mario Sznol, Scott Gettinger, Harriet Kluger, and Lieping Chen participated in a nine-center clinical trial of a drug that disarms a molecular defense mechanism mounted by tumors.

cancer. Following the success of the drug ipilimumab, which also blocks a molecule expressed on the surface of T cells, the findings are the second clear demonstration that unleashing the immune system can produce durable regressions in cancer.

Although BMS-936558 was effective when used alone, the Yale researchers believe that it will be most useful when combined with other therapies.

"I have patients who have benefited enormously from this drug," Sznol said. And while current treatments prolong life for months or a couple of years, Sznol said, "these new therapies may eventually offer the possibility of cure."

—Natalie Villacorta

ACCESS TO FOOD IMPROVES

Healthier foods are more available in neighborhood stores in underserved communities since revisions in 2009 to the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), according to a study by the Rudd Center for Food Policy and Obesity published in the *Journal of the Academy of Nutrition and Dietetics* in June.

The researchers assessed the variety, quality, and prices of WIC-approved foods in 252 convenience stores and non-chain grocery stores in Connecticut before and after the revisions. Access to whole-grain products and fresh produce improved, particularly in low-income communities.

"If the experience in Connecticut is typical of other states," said lead author Tatiana Andreyeva, Ph.D., the center's director of economic initiatives, "national food policy programs that promote consumption of healthy foods but also require changes in stores can help to improve local food environments."

—John Curtis

BLOCKING LUNG DISEASE

A Yale-led team of scientists has uncovered a signaling pathway that promotes cell migration in certain forms of pulmonary fibrosis, a deadly lung disease, and may also be used by cancer cells in metastasis. The findings appeared in May's advance online publication of *Nature Cell Biology*.

There are no known cures or treatments for pulmonary fibrosis—the development of excessive fibrous connective tissue in the lungs. The members of the Yale team found that by inhibiting certain proteins they could block signaling pathways that cancer cells and connective tissue cells need for migration.

"Our ability to block the pathway provides a potential therapeutic target for treating pulmonary fibrosis and other types of fibrosis," said senior author Dianqing (Dan) Wu, Ph.D., professor of pharmacology. "Because cancer cells, particularly melanoma and lung cancer cells containing activated BRAF genetic mutations, can use this signaling pathway to migrate, blocking this pathway could also prevent metastasis of these cancers."

—J.C.

Molecular profiling of tumors is cancer treatment of the future

In May 2011, Marvin B. Brooks, M.D., HS '68, a urologist in Palm Springs, Calif., developed severe back pain while performing surgery. X-rays revealed lung cancer that had spread to his liver and vertebrae. He had never smoked.

His oncologist told him that 10 percent of nonsmokers with lung cancer have a mutation in their epidermal growth factor receptor gene (*EGFR*). If Brooks fell within this category, he might be a candidate for an experimental therapy. The top expert in this field, added the oncologist, is Roy S. Herbst,

M.D., Ph.D., professor of medicine (medical oncology) and of pharmacology, chief of medical oncology, and associate director for translational research at Yale. A week later Brooks was in New Haven, and in the same hospital in which he had previously operated and in which his son was born, he had a liver biopsy that went to Yale's new Molecular Tumor Profiling Laboratory.

Confirming the oncologist's suspicion, the lab detected one of the *EGFR* mutations that seems to be a driver of many lung cancers. Instead of standard chemotherapy, Herbst recommended one daily pill of the experimental drug erlotinib (Tarceva), a reversible tyrosine-kinase inhibitor that targeted the *EGFR* mutation in Brooks' tumor. In October 2011, in January 2012, and again in April 2012, Brooks tested free of cancer. Furthermore, Tarceva eliminated all detectable cancer without inflicting the debilitating side effects associated with chemotherapy.

"I went to Yale thinking I would be dead within a year," said Brooks.

That's the sort of story Yale Cancer Center Director Thomas J. Lynch, M.D. '86, envisioned when he pushed for the profiling lab, which opened in the fall of 2010. "I think cancer treatment in the future will be based entirely on detailed molecular profiling," said Lynch. "This is what everyone will be doing."

Analysis from the Profiling Lab often identifies patients as candidates for new drugs that foil known cancer-causing mutations, thereby changing the course of therapy. "In oncology, these drugs have been shockers," said lab director Jeffrey L. Sklar, M.D. '77,



et cetera ...

ACID MAKES BACTERIUM DEADLY

Salmonella, which kills hundreds of thousands of people each year, turns virulent when it senses that its environment has turned acidic and triggered an increase in its energy level, according to a report in the June 13 issue of the journal *Nature* by researchers from the School of Medicine and the Yale Microbial Diversity Institute.

This mechanism may present a novel target for drugs that can disarm *Salmonella's* ability to cause disease, said Eduardo A. Groisman, Ph.D., professor of microbial pathogenesis and a Howard Hughes Medical Institute investigator. Groisman and associate research scientist Eun-Jin Lee, Ph.D., tracked the signal transduction cascade that enables *Salmonella* to survive within the host's immune cells. Changes in the level of acidity raise ATP levels in the bacterium and trigger a key virulence gene.

"There will never be a world without *Salmonella* because it exists in many, many animal reservoirs," Groisman said. "It is a major public health issue."

—John Curtis

GENES AND HIGHER BRAIN FUNCTIONS

A pattern of gene activity in the language and decision-making centers of the human brain is missing in Fragile X syndrome, a disorder associated with autism and learning disabilities, according to a study by Yale researchers published in the May 11 issue of the journal *Cell*.

The researchers identified evolutionary changes that led the gene *NOS1* to become active and produce a protein product in the parts of the developing brain that form the centers for those higher functions in adults. A protein that controls this activity is missing in Fragile X syndrome, the leading inherited form of intellectual disability among boys and the most common single-gene cause of autism. People with Fragile X syndrome have lower IQs, a high rate of attention-deficit/hyperactivity disorder, and delays in speech and language development.

"The same evolutionary mechanisms that may have gifted our species with amazing cognitive abilities have also made us more susceptible to psychiatric disorders such as autism," said senior author Nenad Sestan, M.D., Ph.D. '99, professor of neurobiology.

—J.C.

Ph.D. '77, professor of pathology and of laboratory medicine, "because they have had such a dramatic effect on tumors that have heretofore been highly resistant to therapy."

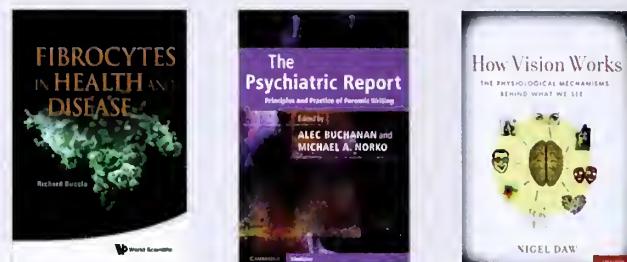
"Right now, in about 20 percent of my patients with lung cancer," said Herbst, "I find some mutation that will let me give a patient a specific oral drug that is much more effective and less toxic than the standard of care. We are working hard to figure out something new for the other 80 percent."

The Profiling Lab also identifies mutations associated with other cancers. About half of all melanoma patients have a mutation in a gene called *BRAF* that responds to a new drug. Other mutations detected by the lab are associated with colon and breast cancer. The lab can currently screen for 66 mutations, each of which requires its own test, all run in a parallel and high-throughput fashion. However, the profiling lab is about to shift to the so-called "next generation" of genomic sequencing, which will detect all 66 mutations with one test. "Genomic sequencing will let us look at many genes all at once and expand indefinitely the number of mutations for which we can routinely screen," said Sklar. "Very soon, we're going to be profiling the full set of clinically relevant mutations within the tumor of every cancer patient who walks through the door of Smilow Cancer Hospital."

The field is accelerating on all fronts. New clinical research and faster sequencing require new developments in software and hardware to process, analyze, and store more and more information. Efforts to develop and utilize

these tools are under way at the Yale Center for Genome Analysis, located at West Campus. "Over the next 10 years," said Richard P. Lifton, M.D., Ph.D., chair and Sterling Professor of Genetics, and a Howard Hughes Medical Institute investigator, "we'll understand the genetic landscape of all the major human cancers, and we will increasingly be using molecular profiling to select treatment for individual patients. Five years ago we really did not imagine we would be capable of doing the things we're doing routinely today."

—Steve Kemper



A “sick care” system

A physician argues that the United States lacks a vision for providing health care.

The United States makes a fundamental error in its management of health, argues Stephen C. Schimpff, M.D., '67, HS '69. The nation leads the world in spending for medical care but lags in quality because it lacks a health care system. Instead, he writes, the United States has a “sick care” system, one “that waits until we become ill before it kicks into action.”

In his new book, *The Future of Health-Care Delivery*, the former CEO of the University of Maryland Medical Center evaluates the American system of medical care, describes trends that will influence medicine in the coming decades, and explains why we spend so much. Then he suggests changes.

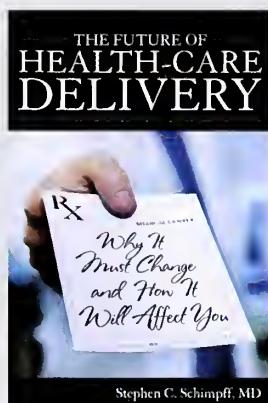
Schimpff observes that our system is more adept at responding to acute illnesses than in undertaking the multifaceted care required to treat chronic disease. But chronic disease now dominates, and patients find themselves “shuttled” among specialists who rarely talk to

one another. Patients are given too many drugs, devices, and procedures, each of which carries risks—preventable errors kill 100,000 Americans each year.

Schimpff describes innovative systems in which specialists work in teams to prevent duplication. He suggests changing insurance policies so that patients pay for routine care and rely on insurance to cover catastrophic costs. President Obama’s Affordable Care Act, he argues, does little to change the way health care is delivered because it focuses on ways to finance care. Instead, writes Schimpff, “We first need to establish a vision for health care ... and then figure out how to pay for it.”

For more details, visit www.medicalmegatrends.com.

—Cathy Shufro



The Future of Health-Care Delivery

Fibrocytes in Health and Disease

edited by Richard Bucala, PH.D., M.D., professor of medicine (rheumatology), of epidemiology (microbial diseases), and of pathology (World Scientific Publishing Co.) This volume provides an overview of fibrocytes, precursor cells of fibroblasts. The contributors discuss the role of circulating fibrocytes in the etiopathogenesis of various fibrosing disorders, atherosclerosis, autoimmunity, and cancer.

The Psychiatric Report: Principles and Practice of Forensic Writing

edited by Alec Buchanan, PH.D., M.D., associate professor of psychiatry; and Michael A. Norko, M.D., FW '88, associate professor of psychiatry (Cambridge University Press) Mental health professionals acting as witnesses in criminal, civil, and child custody cases recognize that the written report is central in legal settings. This book addresses ethical concerns that include conflicts of interest, offers guidance for preparing various types of reports, and covers such issues as the detection of malingering and the use of psychological tests.

How Vision Works: The Physiological Mechanisms Behind What We See

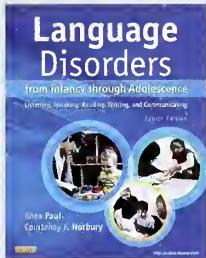
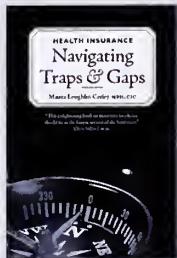
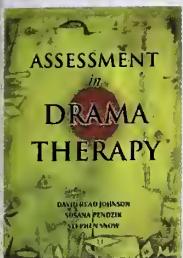
by Nigel W. Daw, PH.D., professor emeritus of ophthalmology and neuroscience, and professor of neurobiology (Oxford University Press) This text, designed to offer a broad overview rather than detailed treatment of specialized topics, covers the psychology, anatomy, and physiology of all aspects of the visual system. Each chapter addresses a separate aspect of vision and includes illustrations.

Assessment in Drama Therapy
edited by David Read Johnson, PH.D. '80, associate clinical professor of psychiatry; Susana Pendzik, PH.D.; and Stephen Snow, PH.D. (Charles C. Thomas Publisher) This book provides a comprehensive survey of assessment in the field of drama therapy, including its history, core philosophy and concepts, and practices. It explores various modes of assessment, including recently developed evaluation tools and assessment of adolescents.

Manual of Skin Surgery: A Practical Guide to Dermatologic Procedures, 2nd ed.

by David J. Leffell, M.D., HS '86, FW '87, the David P. Smith Professor of Dermatology and professor of surgery (otolaryngology and plastic); and Marc D. Brown, M.D. (People’s Medical Publishing House—USA) This book presents the fundamentals of dermatologic surgery, from anatomy, diagnosis, and preoperative preparation and assessment to operative technique and postoperative care.

on campus



Health Insurance:

Navigating Traps & Gaps

by Maura Loughlin Carley, M.P.H. '78, CIC (Ampersand)

This book provides insight into the complex and ever-changing issues of health care coverage, including advice on avoiding costly mistakes and navigating gaps in protection.

Metabolism and Nutrition for the Surgical Patient, Part II

edited by Stanley J. Dudrick, M.D., professor emeritus of surgery (gastrointestinal); Juan A. Sanchez, M.D., MPA, HS '93; and Ronald F. Martin, M.D. (Saunders) This book, part of *The Clinics: Surgery* series, discusses nutrition and metabolism for the chronically ill patient. Topics include nutritional management of geriatric surgical patients and patients with acute and chronic pancreatitis, surgical treatment of patients with diabetes mellitus, immunologic functions and aspects of the alimentary tract related to feeding, and enteral and parenteral feeding access techniques. The book discusses dietary, metabolic, and surgical management of obese patients as well as nutritional support of patients with cardiovascular disease, cancer, and inflammatory bowel disorder.

Language Disorders from Infancy through Adolescence: Listening, Speaking, Reading, Writing, and Communicating, 4th ed.

by Rhea Paul, Ph.D., CCC-SLP, professor (adjunct) in the Child Study Center; Courtenay F. Norbury, D.Phil. (Mosby) This text provides the information needed to assess childhood language disorders and to treat them appropriately. The book presents basic concepts and vocabulary, the scope of communicative difficulties, updated information on best practices, and an overview of key issues and controversies.

ACSM's Guide to Exercise and Cancer Survivorship

edited by Melinda L. Irwin, Ph.D., M.P.H., associate professor of epidemiology (chronic diseases) (Human Kinetics Publishers) This text describes applications of the science behind the benefits of exercise to the design or adaptation of exercise programs for cancer patients and survivors. The guide uses evidence-based information to assist health, fitness, and medical professionals in using exercise to help cancer survivors with recovery and as a strategy both for reducing the side effects of treatment and for enhancing overall quality of life.

The descriptions above are based on information from the publishers.

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A journal's 200-year history

When the first issue of *The New England Journal of Medicine and Surgery, and the Collateral Branches of Science* appeared in January of 1812, New England was "a medical backwater," said Jeffrey M. Drazen, M.D., at internal medicine grand rounds in May.

Drazen, the journal's present editor, said that founder and physician John Collins Warren felt that the new country needed a medical magazine. "Physicians in New England needed to know what was happening in the seats of learning in Berlin, London, and Paris," Drazen said. The journal would appear quarterly, be delivered on horseback, and cost \$3 per year.

Since then, it has assumed different forms until settling on its current name, *The New England Journal of Medicine*, in 1928. This year it celebrates its bicentennial.

The journal has continued to inform physicians throughout its history. In 1898 it reported on a new device called an X-ray. During World War II it explored the medical aspects of war. In 1942 it reported on a new drug called penicillin, and in 1981 it published three articles on a little-understood disease called gay-related immune deficiency, or GRID, now called HIV/AIDS.

"I firmly believe that physicians need the best and most up-to-date medical information," Drazen said, echoing the founding editor's mission.

—John Curtis

Eliminating health disparities

"Your zip code is a more powerful predictor of your health than your genetic code," David R. Williams, Ph.D., M.P.H., told psychiatry resident grand rounds in May. "In some states there is a 13-year difference in life expectancy based on what county you live in."

Subway lines and even specific train stations can be predictors of health in a society full of disparities based on factors that also include race, socioeconomic status, and education level, said Williams, the Florence Sprague Norman and Laura Smart Norman Professor of Public Health at Harvard. The United States, he said, ranks at the bottom of industrialized nations in such health indicators as infant mortality. Improving health, he continued, means addressing issues beyond health.

"We need to invest in our schools, our sidewalks, school programs, produce markets, jobs—not traditional things to think about in terms of health, but these are the things that create opportunities for individuals to make healthy choices," Williams said. "The health of America depends on the health of all Americans. Improving Americans' health will not only improve the economy, it will improve the quality of life."

—J.C.



Medicine in the time of Shakespeare

An exhibit in the Historical Library explored medical theory and practice in 16th-century London.

By Charles Gershman

"A plague o' both your houses," the dying Mercutio cries in *Romeo and Juliet*. "Hysterica passio, down, thou climbing sorrow," exclaims the mad king in *King Lear*, referring to an affliction of the womb. And in *The Winter's Tale*, Camillo presents the visionary notion that a person can carry and spread a disease without showing signs of illness.

Medical references are rife in the Bard's *oeuvre*, garnering attention from literary scholars and medical historians alike. A recent exhibit organized by the Cushing/Whitney Medical Library highlighted themes from Shakespeare's works, including plague, midwifery, domestic medicine, herbal remedies, astrological medicine, surgery, and other medical topics from the period between 1589 and 1613, when Shakespeare produced most of his known work. (Shakespeare lived from 1564 to 1616.) "Medicine in Shakespeare's London," curated by historical librarian Melissa Grafe, PH.D., was part of a university-wide Shakespeare festival and on display from March through June.

In choosing relevant texts to display in the library's rotunda, Grafe decided to paint a broad picture of medical knowledge and practice at the time. "We wanted not only to discuss Shakespeare but to go beyond what Shakespeare might say and write," said Grafe, adding that the exhibit included works not directly connected to Shakespeare in order to give a fuller picture of medicine in that time and place.

Among the texts displayed were *The Byrth of Mankynde, otherwyse named the Womans Booke*, published in 1545 and one of the earliest books written in English on pregnancy and childbirth; a 1633 edition of John Gerard's *The Herball or Generall historie of plantes*; plague orders issued by the Privy Council under Queen Elizabeth I in 1592; and a 1633 edition of *The Workes of that famous chyrurgian, Mr. John Banester*, a compilation of the early works of a surgeon who served the Earl of Warwick.

"We chose selectively," Gafe said. "Some texts were more important than others, but we wanted to show diversity. We wanted to talk about how people understood their bodies, health, and disease during Shakespeare's time."

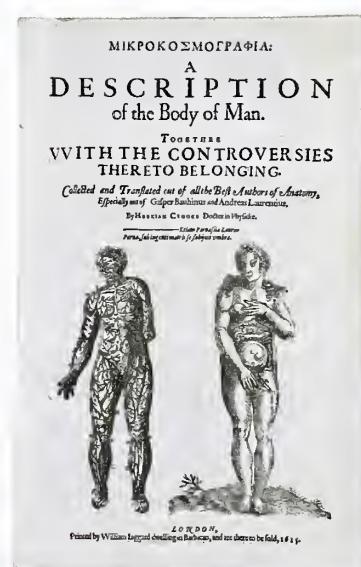
Indeed, some areas of medical knowledge saw significant advances in the Elizabethan Age—Andreas Vesalius laid the foundations for modern anatomy, and Ambroise Paré revolutionized battlefield medicine. Other fields, however, remained mired in ancient concepts. Not until the 19th century did Western medicine abandon the notion, first proposed by Hippocrates, that there are four humors (blood, yellow bile, black bile, and phlegm) corresponding to four human temperaments (sanguine, choleric, melancholic, and phlegmatic). The concept is described and illustrated in the 1664 edition of *The Optick Glasse of Humors*, first published in 1607 by the cleric and writer Thomas Walkington.

Also on display was a 1679 edition of John Hall's *Select observations on English bodies of eminent persons in desperate diseases*, in which the physician describes a variety of diseases through case studies, including observations on melancholy and syphilis. Hall married Shakespeare's daughter Susanna in 1607. Some historians have suggested that this connection explains Shakespeare's medical fluency; however, Shakespeare wrote many of his plays with medical references, like *Macbeth* and *King Lear*, before Hall's relationship with the family.

Although the exhibit included more than 25 texts, Gafe noted that the library's early modern holdings are much more extensive. "This is just a small tip of the iceberg," she said. "We have well over 1,000 books from that period." Selections from the exhibit may be viewed online at exhibitions.shakespeare.yale.edu/exhibitions/medicine-in-shakespeares-london/.



As part of a university-wide celebration of William Shakespeare, the Cushing/Whitney Medical Library displayed medical literature from London in the Bard's time. Among the items in the library's collection are, on facing page, the 1633 edition of *The Herball or Generall historie of plantes*, by John Gerard. On this page, from top; *Select Observations on English Bodies, including observations on melancholy and syphilis*, written by John Hall, who married Shakespeare's daughter Susanna in 1607; a medical/astrological manuscript from circa 1553, including an image of an astrolabe, a device used by astronomers, navigators, and astrologers to plot the positions of the sun, moon, planets, and stars; *A Description of the Body of Man Together With The Controversies Thereto Belonging*, a collection of what were then considered the best works of anatomy and published in 1615; far right, *A Treatise of Melancholie*, by Thomas Vautrollier; and near right, *The Method of Curing Wounds Made by Gun-shot, also by Arrows and Darts, with their Accidents*, by the surgeon Walter Hamond.





“A gentle man”

Arthur Ebbert Jr.’s friends and colleagues recall his graciousness and unfailing courtesy.

By Natalie Villacorta

When Leon E. Rosenberg, M.D., HS ’63, became the dean in 1984, he immediately asked Arthur Ebbert Jr., M.D., to stay on as deputy dean. Ebbert, who had spent more than 30 years in the School of Medicine’s administration, including 10 as deputy dean, had planned to take a sabbatical year and return to the university in a different role. But Rosenberg needed Ebbert’s help with the fundraising campaign, the construction of new buildings, and his state of the school address. Ebbert agreed to stay for two more years to help the new dean gain a foothold, beginning with providing feedback on the draft of the address.

“His advice was always measured and based on experience, but always given with decency and politeness, with diplomatic wording,” Rosenberg recalls. “I told him I was going to count on him to tell me which doors to open and which to keep closed. He understood what that meant.”

Though Ebbert regularly reminded Rosenberg that the clock was ticking, he agreed when Rosenberg entreated him to stay an additional year. “But I think there was another thing going on,” Rosenberg joked at Ebbert’s retirement reception in 1987. “He was going to wait to be sure that I didn’t screw up what he’d been working 34 years to set up around here.”

Ebbert died on June 7 in Hamden, Conn., where he had retired. He was 89. He left a brief obituary to share with the medical school community but requested that it not be submitted to the newspapers and that no memorial service be held in his honor. His friends and colleagues remembered him as an unassuming, modest man, who preferred to stay out of the limelight.

Many roles in a time of change

In his 34-year tenure, Ebbert filled a number of roles during a time of change around the country and at the School of Medicine. He arrived in 1953 at the invitation of Dean Vernon W. Lippard, M.D. ’29, with whom he had worked at the University of Virginia, where Ebbert had received his undergraduate and medical degrees and completed his residency in medicine. He worked his way up the academic ladder at Yale from instructor to professor to assistant dean of postgraduate education, then to associate and deputy dean, and served under three more deans—Frederick C. Redlich, M.D., Lewis Thomas, M.D., and Robert W. Berliner, M.D.—before Rosenberg. Ebbert watched the faculty grow from 150 to more than 700, and class size increase from 60 to 100.

students. When Ebbert came to Yale, women made up only 10 percent of each class but by the time of his retirement, their numbers were approaching 50 percent.

"You could have been dean many times at many schools, but you chose to stay at Yale," Berliner said at Ebbert's retirement reception. "Five deans! One dean is too much for many of us. ... It's my conviction that you, working with five deans, have done more for this school than any other person since Dean Winternitz made it a modern medical school."

Transformations across the country found their way to Yale as well during Ebbert's time. In 1965 the implementation of Medicare and Medicaid created a new source of revenue for doctors and hospitals as the government now paid for patients previously treated without charge. These changes, along with increased understanding of the complexity of science and medicine, prompted increased specialization—leading to the creation of several new departments in the early 1970s, including anesthesiology, neurology, and laboratory medicine. In the same year that the Medicare program went into effect, the Grace-New Haven Community Hospital and the School of Medicine ratified a new affiliation agreement, and the hospital was renamed the Yale-New Haven Hospital (YNHH), reflecting its role as the university's main teaching hospital.

New buildings rose on campus, including Harkness Hall in 1955, and a year after Ebbert's retirement, the Yale Physicians Building. In 1981 the Yale Faculty Practice Plan was created to coordinate the clinical activities of the full-time medical faculty into one multispecialty group practice.

As Ebbert rose through the ranks, however, he saw fewer and fewer patients. He spent his days in the dean's office approving faculty promotions and appointments; overseeing surveys of the school by the Association of American Medical Colleges; interviewing prospective students; and advising students about their postgraduate plans. Ebbert also chaired the Student Advisory Council, established in 1963 to provide students with a faculty mentor who could guide them in understanding the relationship between basic science and clinical medicine, selecting elective courses, and starting research projects for their theses.

But those who observed him in the clinic thought that a physician with such patience and perception, who had honed his skills in internal medicine as a captain in the U.S. Army Medical Corps in postwar Japan, should have been treating patients. In a letter to Ebbert upon his retirement, Donald S. Dock, M.D., HS '57, wrote:

"My first encounter with you was as the physician for a patient with suspected pheochromocytoma on one of the Winchester wards in the summer of 1955. I had just come up after an internship at Hopkins and recall clearly marveling at the astute way you picked apart that case. For a while I thought it was a loss to the practicing world that you had

taken a big job in the dean's area, but I've quickly realized how important that move was to the medical school."

Indeed, Ebbert's friends and colleagues recall not just the projects he oversaw or the administrative tasks he performed but also his way of making people feel that they could confide in him, and his calming, trustworthy effect. He understood the challenges that the faculty faced—funding, personality incompatibilities, career decisions. He would listen to these dilemmas patiently, always offering fair and wise counsel. Ebbert was "a vital link between the faculty and the administration," said Dorothy Horstmann, M.D., FW '43, a close friend, at his retirement reception. (Horstmann, a researcher whose key finding about polio led to the development of a vaccine, was the first woman to be named a full professor at the medical school.)

"If you had a question about where to turn next, 'Ask Art' was the motto," recalls John E. Fenn, M.D. '61, HS '67, clinical professor of surgery (vascular). "Anybody could approach [him] with any kind of problem, and if he didn't solve it, he knew how to give you advice to go about seeking a solution." As chief of staff of YNHH from 1982 to 1993, Fenn himself often turned to Ebbert for advice, finding in Ebbert a comforting ally at the School of Medicine. Whether it was a problematic student, a lost key, or a widow who needed an escort to a university function, Ebbert could be relied upon to help.

Friendships maintained

Ebbert, who was born in Wheeling, W.Va., in 1922, was an only child and never married. "His family was Yale," said Sharon McManus, major gifts officer for the School of Medicine, who knew Ebbert when she was director of alumni affairs.

Many of the students he interviewed for the admissions process during his early years at Yale went on to become faculty members and colleagues, including Fenn; Gerard N. Burrow, M.D. '58, professor emeritus of medicine, who became dean of the medical school; and Michael Kashgarian, M.D. '58, HS '63, FW '65, professor emeritus of pathology. (At the time, the admissions committee consisted of Ebbert and his friend and colleague Thomas R. Forbes, PH.D., the Ebenezer K. Hunt Professor of Anatomy and an associate dean of the medical school.) Ebbert formed friendships through this role that endured long after the students had graduated. To maintain

those friendships he founded the *Alumni Bulletin*, the precursor of *Yale Medicine*, in 1953. The early issues were simple eight-page newsletters, the editorial staff consisting of Ebbert and his assistant, Guldane Mahakian.

The first issue entreated its alumni readers to act as both “field correspondents and literary critics,” and to welcome the *Bulletin* as “the expression of a real desire on the part of the new School administration to strengthen the loyalties of our Yale family.” “Alumni looked to him as a personal link to the school,” remembers Kashgarian, who succeeded Ebbert as editor in chief of the publication in 1986, a position he still holds.

The *Bulletin* reported on everything from the meetings of the Association of Yale Alumni in Medicine (AYAM) and the recipients of awards and appointments to student performance on board examinations. The *Bulletin* was also a forum for such news as the School of Medicine’s adoption of a coat of arms, reported in the October 1963 issue.

As the school grew, so did the publication, with contributions from other members of the medical school community; in 1966, its name was changed to *Yale Medicine*. Long after Ebbert had stepped down as editor in chief, he continued to send newspaper and magazine clippings about alumni achievements to include in the next issue.

He also served as the medical school’s delegate to the AYAM, always returning with impeccable reports of their meetings, McManus recalls. For his dedication, Ebbert was made an honorary member of the association.

His long-term friendships and his institutional memory made him “the library of the place,” Rosenberg says. Fittingly, he loved the Medical Library and “thought it was one of the jewels in the crown of Yale School of Medicine,” remembers library director Kenny Marone, M.L.S.

A longtime friend and member of the Associates of the Medical Library, Ebbert served as its membership chair. Ebbert made sure that the collections and the staff were appreciated and protected, Marone says. He established a memorial fund in honor of his parents in 1977. He was also a devoted member of both the Nathan Smith Club for faculty and students interested in the history of medicine and the Beaumont Medical Club for physicians in the community and at Yale. At the club’s monthly meetings, members would drink sherry and listen to a presentation given by one of their fellow members, followed by dinner in the Beaumont

Room. They would toast the anonymous donor of the wine—who was Ebbert, Burrow recalls.

Merle Waxman, M.A., director of the Office for Women in Medicine, has several books that were gifts from Ebbert, including *The Trauma of Moving: Psychological Issues for Women* and *The Handbook of Nonsexist Writing*, both written by friends of his. Inside the books are labels on which Ebbert had recorded the date in his clear, precise handwriting. She remembers that when she became director of the Office for Women in Medicine, which Ebbert and Berliner were instrumental in establishing in 1975, he offered to sponsor her membership at Mory’s, a private club for alumni, faculty, students, and others affiliated with Yale. “But Dr. Ebbert, isn’t that a club for men?” Waxman asked. “Oh, no, my dear,” Ebbert responded, explaining that the club had been open to women since 1972. Waxman ended up becoming a member.

Ebbert, she said, “was willing to speak and to defend fairness,” when it came to gender disparities at the School of Medicine. Ebbert advised the office, which seeks to increase the visibility and accomplishments of women in medicine and to provide them with social and professional support. He supported revisions to Yale’s tenure system that would allow tenure-track women to work half time, giving them more time to achieve tenure, as many of them were simultaneously starting families. Ebbert also helped in the creation of the Phyllis Bodel Childcare Center, which has provided on-site care for the children of faculty, students, and staff since 1979.

Christmas cards, sailboats, and lunches at Mory’s

“Art looks like Mister Rogers, he sounds like Mister Rogers, and he behaves like Mister Rogers!” Rosenberg’s wife, Diane Drobniš, and daughter, Alexa, used to say.

Like Mister Rogers, whom Ebbert portrayed in a second-year show, he was everybody’s favorite neighbor. Ebbert’s friends and colleagues recall that he always asked after their family’s welfare and sent handwritten Christmas cards every year. He maintained an extensive social network and always kept in touch with people—catching up with friends over lunch at Mory’s. His guests would arrive to find him sitting at his favorite table dressed in a jacket and striped, regimental tie—his uniform no matter the occasion. “I’m sure he didn’t go skiing in a tie—but it’s hard to picture—I’ve only ever seen him in ties,” says Waxman.

Ebbert loved to ski and sail. He was a member of the Sachem’s Head Yacht Club in nearby Guilford and owned a 24-foot-long Pearson Ensign sailboat named Goose. He purchased the Ensign from a family who named their boats after birds with a double o in their names (another of the family’s boats was named Loon). Though Ebbert didn’t particularly like the name, he kept it since it is bad luck to change a boat’s name.

“He was a consummate sailor,” recalls Francis M. Lobo, M.D. ’92, who met Ebbert through the Nathan Smith

In 1953 Arthur Ebbert, then the medical school's deputy dean, launched the *Alumni Bulletin*, an eight-page newsletter that evolved into the current format of *Yale Medicine*. Ebbert felt that the school needed a publication that would keep alumni informed of happenings on campus.

Club and crewed on Goose during races. On the downwind leg, when there was nothing to do but relax, Ebbert would break out gingersnap cookies and iced tea, while most other crews would be drinking something harder.

This kind of old-fashioned gentlemanly behavior was typical of Ebbert—he always opened the door for women with a smile on his face, never raised his voice, and was particular in his speech—when he dictated to his assistant, he included punctuation marks. When his mother's health was failing he would visit her almost daily, reading aloud to her after the print became too small for her to make out. Ebbert also looked after Helen Forbes, the widow of his long-time friend and colleague, with the same devotion.

This loyalty extended from his friendships into his personal habits. He didn't own a television, preferring to keep informed about current events through newspapers, magazines, and the radio. He didn't have an e-mail address and wrote all his notes by hand. He drove only American cars, with a preference for Oldsmobiles and Chevrolets.

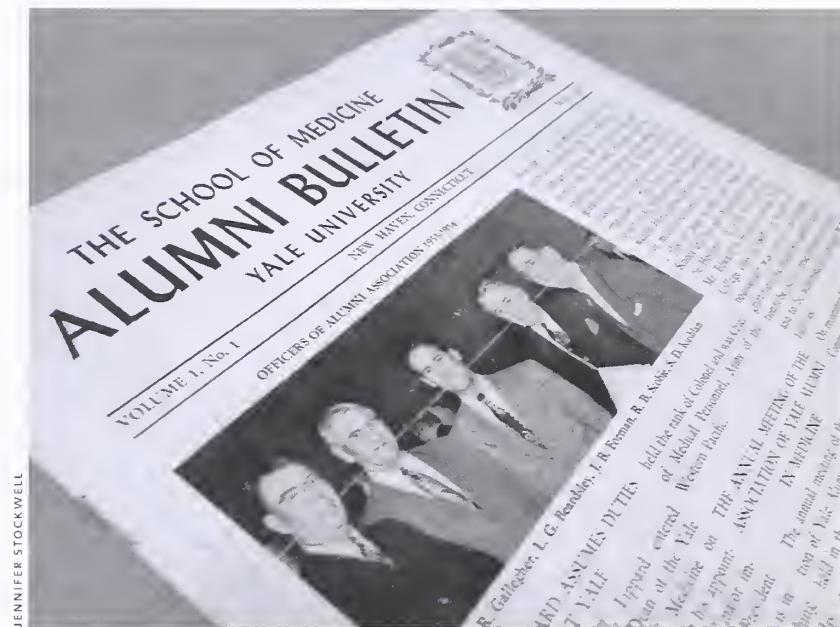
"He was an extraordinary, comforting, gentle man. Not gentleman; *gentle man*. And a gentleman as well. Clearly a gentleman as well," Fenn says.

Before Art and After Art

"This is really the end of an era at the Yale School of Medicine—it is the Ebbert era," Rosenberg announced at Ebbert's retirement—or "commencement," if you asked Ebbert—reception in 1987, where Ebbert's admirers overflowed the courtyard outside of Harkness Dormitory. "B.A." may mean something to some of you concerning this time of year, but to us it means 'Before Art.' And 'A.A.' may have significance to you, but to me it will always mean 'After Art.'"

On that pleasant June day, Ebbert's devotion to the school was recognized, to his surprise, with the naming of the third-floor lounge of the Hope Building in his honor. His colleagues could not think of a more appropriate place, as the lounge was "a gathering point" for students, faculty, and alumni, representing Ebbert's relationships with all.

True to character, Ebbert spoke only a few words of thanks at the ceremony, wanting his guests to get back to enjoying the party. "I know you probably would have preferred to go golfing or play tennis or sail or do your gardening," he said. While the speakers before him had lauded his service to the students, faculty, and alumni, Ebbert paid tribute to the



staff—the business managers and the secretaries. "They're the people that know how to get things done around here," he said. He asked Mahakian, his administrative assistant of 22 years, to stand, and presented her with a bouquet of flowers. She wrote in a thank-you note to Ebbert, "As a number of people have told me since, they know of no one else who would have honored their secretary as you did. ... It was a party for *you* but I'm so happy you included me!"

Ebbert received a stack of letters from former colleagues, students, and friends who could not attend the reception but wanted to add to the chorus of congratulations and words of thanks. The letters came from as far away as Los Angeles and Miami and as close as the School of Nursing. Many wrote that they had learned of his retirement from an article in *Yale Medicine*, reaffirming the importance of the publication he had founded.

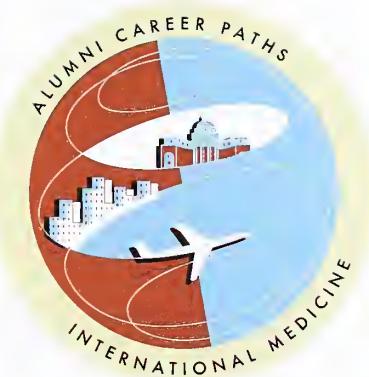
From the wall in the Hope Building where his portrait, painted by William F. Draper, hangs today, Ebbert will continue to be in the background, where he felt most comfortable—wearing a jacket and tie, as always. **YM**

—Natalie Villacorta is a student at Brown University and was *Yale Medicine's* 2012 summer writing intern.





MÉDECINS SANS FRONTIÈRES



Yale doctors around the world

Since the days of Peter Parker, alumni have brought health care to underserved regions of the world.

By Jenny Blair

As a medical student in South India in the mid-1980s, Unni Karunakara, M.P.H. '95, Dr.PH., read a magazine article that he remembers still. It was about Médecins Sans Frontières (MSF, also known as Doctors Without Borders), a medical humanitarian organization famed for rushing medical aid to disaster areas and war zones. Karunakara wrote to MSF saying he would like to work with them.

He never received a reply. But 10 years later, as a Yale public health student on his way home from a fellowship in South Africa, Karunakara met an MSF representative in the Brussels airport. Soon he was offered a job. "It was never meant to be a lifetime engagement," he recalled. "Now it's been about 15, 16 years." After managing viral hemorrhagic fever outbreaks in Africa and caring for Bangladeshi cyclone victims—among other responsibilities—Karunakara is now MSF's international president. Based in Geneva, he chairs their international board and represents the organization to the international community and national governments between travels to field projects all over the world.

Like Karunakara, Yale medical students and graduates routinely cross borders to work in what are usually low-resource medical settings. The tradition of service abroad dates to the 19th century, when such medical school alumni as Peter Parker and Moses C. White traveled to China as medical missionaries; it experienced a resurgence in the



PREVIOUS PAGE Unni Karunakara, international president of Médecins Sans Frontières, at a malnutrition screening in a mobile clinic at a camp for internally displaced persons in Mogadishu in 2011.

1990s with a renewed interest in global health, once known as tropical medicine or international health. Some alumni began training overseas as students, while others have incorporated overseas work into their practice, made international health a career focus, or even moved abroad permanently. The work forces them not only to recall fundamental skills but also to confront medicine's intersections with policy, the environment, religion and culture, economics, and poverty. And for those willing to forgo fast diagnostics and advanced medications, working abroad can provide satisfaction that practice in the United States may not.

"There's almost never a day that goes by when you don't think, 'Boy, I really saved that patient's life or limb,'" said Kinari Webb, M.D. '02, who started a clinic in rural Borneo and has made Indonesia her home. By contrast, she said, as a family practice resident in the United States, "I felt like my major successes as a physician were getting people off 15 meds and down to four."

"You're getting to the heart of why we go into medicine," said Anna Gibb Hallemeier, M.D. '02, HS '06, who has worked in Kenya and New Zealand. "The impact that you can make is a lot more visible, I think, than doing primary care in the States." And, she said, international medicine can put the vagaries of American practice, from its prescriptions for wrinkles to its constant threat of lawsuits, into perspective.

Travels abroad and medicine

It was an international experience that led Hallemeier to medicine. As an undergraduate she studied chimpanzees in Uganda, and that's where she changed her career plans. Webb had had a similar epiphany after studying orangutans in Borneo. "When Kinari and I met in medical school, we compared our admissions essays, and they were essentially identical," Hallemeier said. "We both went to the forest and decided we preferred the human primate to the other primates." Her change of heart occurred as she watched her local guides and hosts falling victim to diseases like HIV/AIDS and malaria. "It was just so unavoidable—how important public health was, how important prevention was," said Hallemeier. "I realized I'd rather be working to do something about these diseases than observing chimpanzees in the forest and trying to pretend that these problems weren't there."

For Ellis L. Webster, M.D. '91, an ENT and head and neck surgeon, the road to international medicine was the

road—or rather the flight—home. In addition to a busy practice in West Palm Beach, Fla., he spent years caring for poorer patients 30 miles west in Belle Glade, many of whom paid him in mangoes and lettuce; and he provides free surgical care for patients from Haiti, some of them victims of the 2010 earthquake. Now, he works on the Caribbean island of Anguilla every month. "The reason why I wanted to do medicine was to help people," he said. "It seems like a cliché."

Webster grew up on the island, a British overseas territory that is home to about 13,500. Urged by his mother, who had six other children, to avoid his fisherman father's path and get an education, Webster began his health care career as a 16-year-old studying dentistry in Trinidad; attended the University of the Virgin Islands; completed medical school at Yale; and trained in otolaryngology at the University of Iowa. As he made a career in the United States, the knowledge that his own people lacked ENT care weighed on him. "It's like a Third World country in terms of the medical care that's provided," he said. The territory's few primary care physicians are sent by the British Foreign and Commonwealth Office to serve one-year terms fresh out of medical school.

So Webster started a part-time practice on the 35-square-mile island in 2010. He set up an office, shipped equipment (the Anguillan government waived some import duties), and opened his doors that September. One week a month he cares for Anguillans' nasal polyps, sinusitis, mastoiditis, and goiters, as well as an occasional tongue cancer. He sees patients with long-neglected chronic conditions like draining ears or goiters; the latter can leave people short of breath for years, but after surgery they may return to their usual way of life. The gratitude his patients show, said Webster, makes the monthly trip to his home island deeply satisfying. It was something he had always wanted to do, he said; "something I needed to do to give back. Now my people do not have to travel abroad for routine ENT care and I can treat head and neck diseases before they become debilitating or unresectable."

Low-resource medicine

Medical practice is challenging at the best of times, but it can be much more so in a low-resource setting. Emergency physicians may have to manage long-term diabetes care without access to benchmark blood tests. Gastroenterologists may have to guess whether a patient is having a heart attack. A coughing patient's diagnosis may require a therapeutic trial of antibiotics—if those don't work, maybe it's TB. Maybe. "It requires comfort with uncertainty, which many Western physicians can't handle," said Webb, who has worked with dozens of American students and physicians at her clinic. And though the cost of treatment is an issue in the United States, it can be a deal-breaker abroad: A family without a safety net may risk starvation if they sell their rice fields or cow to pay for treatment. "You are treating the whole community and you are treating the whole family," said Webb. "Sometimes



COURTESY OF ALISON NORRIS (2)

LEFT In Zanzibar, Tanzania, Alison Norris conducted a focus group discussion about contraception and pregnancy for a group of married men in a rural district in 2010.

BELOW While walking to a field site at a sugar plantation in northern Tanzania, Alison Norris and two of her children were joined by a cheerful group of children who live on the plantation. Norris carried out her doctoral research there in 2004.





NIKKI SEE



COURTESY OF RACHEL BRONZAN

TOP Kinari Webb launched a clinic in 2007 with the dual goals of providing health care to an underserved population and preserving the nearby rainforests, which are threatened by logging.

ABOVE Rachel Bronzan spent several years in Malawi, treating malaria and conducting research. She and her husband, Frank, took time out for a walk with their daughter, Alexis, near Mt. Mulanje.

that means you've got to tell them that they shouldn't spend any more money on care."

Even providing basic care may not be simple. To get the right medication to some Anguillan patients, Webster often brings drug reps' free samples to the island because staples like nasal steroid sprays and advanced antihistamines aren't available there. "I find that I am writing for meds that are antiquated by U.S. standards," he said. Diagnostic tools are similarly scarce, he added, which means he sometimes relies on "intuition and gut feelings. This is where you really put what you learned in medical school and residency to work. It takes up to three months to get pathology reports; therefore I have to make intraoperative and treatment decisions based on prior experience. I also often see patients with non-ENT conditions, who show up to get medical attention."

A veteran of many field hospitals, Karunakara is intimately aware of the challenge of simplifying Western medicine for the field without sacrificing quality. For sleeping sickness, he said, MSF found a way to cut the usual four-times-a-day infusions to twice a day and then finish the treatment with oral medications. And MSF pushed drug companies to create fixed-dose combinations of HIV drugs, which have made it much easier for patients to adhere to treatment. "These are common-sense innovations," he said. But making fixed-dose combinations possible, however, required the ingenuity of generic drug companies in India and taking on some of the most powerful corporations in the world.

The big picture in medicine

Indeed, working in developing countries often means physicians must think about the big picture in a way they may never have to do at home. The effects on medical practice of politicians, polluters, corporations, and cultures can be clearer when viewed from a foreign, low-resource perspective, perhaps because one's patients tend to be poorer and more vulnerable. The ways in which such forces interact with medicine were a topic of intense discussion during medical school among four students who matriculated in the class of 2002: Webb; Hallemeier; Alison Norris, M.PHIL. '04, PH.D. '06, M.D. '08; and Margaret Bourdeaux, M.D. '03. All went on to make such questions a part of their professional lives, and they remain connected to one another today through Webb's Borneo work. "We were systemic thinkers," Webb recalled. "We were interested in how medicine fit into the whole world."

In the years since, Webb quite literally saw the forest for the trees. She began an NGO called Health in Harmony and opened a clinic near a rainforest in Indonesia. It combines clinical practice, public health, and rain forest conservation, which suits the physician who hasn't stopped caring about orangutans and their habitat. "I know that the conservation and academic part are incredibly important for the long term, but I also need to combine it for myself with the short-term satisfaction" of patient care, Webb said.

Norris traveled to Kenya as an undergraduate to study a new drug for trypanosomiasis, a disease caused by parasitic protozoa; though the drug killed more lab mice than trypanosomes, she found herself enamored of East Africa. “I [was] excited by how much one can do with so little,” she said. She returned to the region before medical school and again as a Downs Fellow, then wrote her Ph.D. thesis on sexually transmitted diseases on a sugar plantation in Tanzania—this time with two small children in tow. Norris is now an assistant professor of epidemiology at Ohio State University’s College of Public Health; she is also president of Health in Harmony’s board of directors.

Bourdeaux and Hallemeier are also involved with international work from the United States while remaining clinically active. Hallemeier combines a Cape Cod practice with Health in Harmony work. Though she spent two months in Kenya’s Maua Methodist Hospital as a medical student “gaining hands-on experience on the inpatient wards,” then six weeks in New Zealand as a Yale/Johnson & Johnson scholar, family obligations have kept her stateside while she continues her international medical involvement. Hallemeier has served as both board president and a board member of Health in Harmony, where she talks with potential donors and volunteers and helps coordinate their complex trips to Borneo. “I couldn’t be in Borneo myself, so I wanted to do what I could from this end,” Hallemeier said.

Bourdeaux studies global health policy and humanitarian aid at Boston’s Brigham and Women’s Hospital while caring for neonates there. She grew interested in the mechanics of humanitarian aid during two stints in Kosovo shortly after the war there had ended. For her M.D. thesis, she did an ethnography of the health system there that made her rethink her assumptions about the effectiveness of humanitarian intervention when an NGO doesn’t understand local culture. Albanian physicians who had fled as refugees were often hired by NGOs to staff postwar hospitals, but because they had fled, those same physicians had lost the trust of the population. “Nobody wanted to go to the publicly run clinics or hospitals because there was such a huge trust deficit,” said Bourdeaux. “The international community didn’t recognize this at all.”

The situation on the ground

Such confusion is familiar to Rachel Bronzan, M.D. ’95, M.P.H., a veteran of the Centers for Disease Control and Prevention’s

Epidemiology Intelligence Service who studied malaria and provided clinical care in Malawi for several years. She now serves as an advisor to the government of Togo from her home in Seattle. Rural women in Malawi, Bronzan recalled, sometimes knelt before asking her a question. Such things “[make] it clear that you just don’t understand or know where [people are] coming from.”

Not fully understanding the cultural situation on the ground is a problem for many NGOs attempting to provide aid. In fact, the last 15 years or so have seen an intense international effort to better delineate aid organizations’ responsibilities. It’s human nature to want to rush to the scene of a disaster to try to help—an impulse that may be especially strong in people like physicians who have specialized skills. Yet, as the flawed hires in Kosovo demonstrate, there are too many ways to go wrong. In the aftermath of the 2010 Haiti earthquake, responders ranging from teenage Scientologists to pediatric ICU specialists descended upon the island, while stacks of boxes containing old clothes mailed by American churches accumulated under tarps at the airport. This shower of unorganized labor and supplies is what experts sometimes refer to as the second disaster. Not all personnel and supplies are needed, yet they will have to be dealt with somehow, sometimes at great cost to other responders.

This “second disaster” points to the disturbing idea that humanitarian aid can do more harm than good. To help requires more than good will and a black bag.

“We have so many people going out there with a trunk full of albuterol and thinking that’s going to help,” said Bourdeaux. “There needs to be some recognition that humanitarian response requires some training and some thought.” She compared the world’s checkered and disorganized disaster responses to the way that a town without a fire department might respond to a house blaze. “What you have is a bunch of neighbors ... with fire hoses. Some of the people who own them have experience putting out fires, some don’t. We need a fire department.”

Bourdeaux now studies military approaches to humanitarian aid, including those initiated by the United States military and NATO. “There’s lots of potential for improvement in how the international community responds to things,” she said. “I find it to be one of the most fascinating stories of our generation.”

A new interest in global health

Whatever overseas commitment Yale medical students and alumni are making, they are doing so these days in increasing numbers. When Bronzan graduated in 1995, international work didn’t strike her as a prominent option at Yale. Such faculty members as polio expert Dorothy Horstmann, M.D., FW ’43, infectious disease specialist Robert E. Shope, M.D., HS ’58, and virologist Wilbur G. Downs, M.D., M.P.H., routinely worked in the developing world; and the Wilbur



COURTESY OF ELLIS WEBSTER

Ellis Webster, an ENT and head and neck surgeon, has a practice in Florida, but once a month he returns to his home island of Anguilla to provide care to the islanders.

Downs International Health Travel Fellowship Program for student research abroad has been available since 1966, but foreign opportunities were still “more of a curiosity” in Bronzan’s time. “People would be encouraging,” she said, “but there was not a big culture of it at all.”

One of the people who changed that state of affairs and helped put Yale on the international medicine map is Frank Bia, M.D., M.P.H., FW ’79, professor emeritus of internal medicine. Bia graduated from medical school at Cornell in 1971; his yen to work abroad [chronic pruritus pedis] was so unusual that it invited ribbing. “You seem to think we’re running a travel agency rather than a medical school,” his dean told him. After medical school, Bia worked at the Albert Schweitzer Hospital in Haiti. Along with Michele Barry, M.D., HS ’77, he co-founded Yale’s international health program in 1981. Twenty years later, the program received funding from Johnson & Johnson. Between 1981 and 2011, what is now called the Yale/Stanford Johnson & Johnson Global Health Scholars Program had funded overseas rotations for some 600 physicians. Residents and career physicians can apply to work in one of five sites in South Africa, Uganda, Liberia, Indonesia, and Rwanda; many of the slots come with funding for travel and expenses.

Information, said Bia, is behind the explosion of interest in international medicine, in part because the Internet has made disparities so obvious. “Medical students are coming to medical school with a sense of global citizenship,” he said. Technology is also easing interactions across borders in an unprecedented way. A few decades ago, physicians serving in remote areas might not have had access to a telephone, much less an Internet connection. Now Bia can co-author a manuscript with someone in Eritrea.

Bia left Yale in 2008 to serve as the full-time medical director of the NGO AmeriCares. By that time, overseas rotations were already a highly sought-after option among medical students. The school’s 2006 establishment of an Office of International Medical Student Education, headed by Robert Rohrbaugh, M.D. ’82, HS ’86, FW ’88, professor of psychiatry, formalized this development, providing funding and supervised international electives as well as hosting foreign students in a bilateral exchange. Under its auspices, three Yale medical students went abroad in 2007, the program’s first year. Last year, 30 did.

Yale is not alone in providing international opportunities for its students. Carol A. Aschenbrener, M.D., chief medical education officer at the Association of American Medical Colleges, said that as of 2010, two-thirds of the 130 medical schools that responded to a survey said that they had integrated global health into their curricula. “Things that happen here affect health elsewhere in the world and conditions in other countries affect our health,” she said. “Understanding the major issues in global health is really critical for future physicians.”

No single approach

How can physicians and students be sure they'll be useful? Webb's clinic is designed to be a permanent presence in its community and effect long-term change. By contrast, Karunakara thinks MSF and other humanitarian aid organizations should stick to rapid relief and not take on capacity-building. "You're there to help people and not to help systems," he said; the goal of aid is to alleviate suffering rather than to alleviate poverty, which is the role of long-term development programs. MSF's long-term effects arise, he said, when the organization provides a model that can be scaled up by domestic authorities. "Very often, these demonstrations get taken up by other agencies, and they try it on, and they improve on it."

Whether doctors sign up for a one-week mission trip or join an organization like Health in Harmony or MSF with an aim to live abroad for months or years, there are some things to look out for. "Going with an organization that has been there for a long time in-country is important," said Bourdeaux. "Not just ones that are famous. Get a sense of their authenticity and street cred." She also recommended that physicians consider deploying not in the immediate wake of an acute emergency, but some time later, when world interest has receded.

However carefully chosen the organization, alumni say that whether a doctor will find international work satisfying may depend on the doctor. Bronzan recalls how one Western physician in Malawi reacted to the death of a child from severe meningitis. "He just lost it," she said, and recalled the man saying, "This is outrageous—in my entire career, no child has ever died of meningitis.... He went ballistic and wanted to change everything." What he didn't appreciate was that children in that clinical setting had underlying medical and social conditions that sometimes made meningitis all but impossible to treat.

Webb echoes many international physicians who advise doctors to think past the altruistic satisfaction of a short trip. "Western physicians should only ever be going to teach and learn from their local colleagues," she said. "I think that the whole point is capacity building. It's not about tourism; it's not about getting your own experiences. It's about improving care for people in the long run." **VM**

—Jenny Blair, M.D. '04, is a freelance writer based in Austin, Texas. She spent a year at the Health in Harmony clinic in Borneo.

Bibhav Acharya M.D. '11, Jason Andrews M.D. '06, Sanjay Basu, M.D. '09, PH.D. '09, Duncan Smith-Rohrberg Maru, M.D. '09, PH.D. '09, and Ryan Schwarz M.D. '11, M.B.A. '11, while still in medical school, formed Nyaya, a clinic and hospital in a remote region of western Nepal. The hospital was founded with support from the Nepalese government and is completely staffed by local Nepalese health care providers.

Kyeen Mesesan Andersson, M.D. '07, PH.D. '07, uses mathematical models to study epidemics of infectious disease. Much of her research has focused on HIV prevention in South Africa. She is a senior modeler and policy analyst at the Futures Institute, a global health organization based in Glastonbury, Conn., that specializes in the design and implementation of public health and social programs for developing countries. She is also a member of the Clinical and Health Services Research Core at Yale's Center for Interdisciplinary Research on AIDS.

Dagan Coppock, M.D. '04, a poet and primary care physician who practiced near Boston, is spending two years in Botswana as a preceptor for Beth Israel Deaconess Medical Center's training program. He previously studied the poetry of traditional healers in Nigeria.

Kecka Jobarteh, M.D. '02, M.P.H., heads the HIV care and treatment program in Mozambique for the U.S. Centers for Disease Control and Prevention. He is a co-founder of Speak Up Young Africa, which has produced a documentary film highlighting the positive responses of young people to the HIV/AIDS epidemic in Uganda, Zambia, Zimbabwe, Nigeria, and Burkina Faso. Jobarteh, who has worked in a number of African countries, served as a Pediatric AIDS Corps physician in Malawi, where he also worked with Partners in Health as director of pediatrics and pediatric infectious diseases.

Eric Krakauer, PH.D. '91, M.D. '92, assistant professor of medicine, and of global health and social medicine at Harvard Medical School, and a practicing internist and palliative medicine specialist at Massachusetts General Hospital, has been working in Vietnam since 2001, when he founded the Vietnam-CDC-Harvard Medical School AIDS Partnership to provide training and technical assistance in HIV/AIDS treatment to physicians and nurses in partnership with the Ministry of Health. As director of international programs at the Harvard Medical School Center for Palliative Care since 2005, Krakauer has assisted Vietnam's Ministry of Health and major cancer centers and general hospitals to integrate pain relief and palliative care into the country's health care system. Recently, Krakauer began working with Partners In Health to integrate pain relief and palliative care into cancer, HIV, and non-communicable disease treatment programs in Rwanda and Malawi.

Roger Mason, M.D. '70, a vascular surgeon, worked in Trinidad and Tobago from 2004 to 2009 as a vascular surgeon, founding Caribbean Healing Arts, Ltd (CHA) in 2006 to improve the quality of health care in Caribbean emerging nations. CHA accomplishes its mission by building medical centers of excellence in Caribbean islands, recruiting "top docs" from North America and England who offer medical care to medical tourists as well as nationals. Profits from medical tourism operations subsidize care for nationals. Yale physicians and public health graduates who would like to participate in this effort are invited to contact Mason at shaman212@gmail.com.

Sarah Tishkoff, PH.D. '96, the David and Lyn Silfen Associate Professor in the departments of genetics and biology at the University of Pennsylvania's Perelman School of Medicine, studies the genetic history of Africa and has found greater genetic diversity among Africans than in any other ethnic group.



Are you a physician who writes or works in another of the fields we'll be profiling in our "Alumni Career Paths" series? Do you know medical school alumni, former Yale house staff, or fellows who are? Send us the names and then check the Web edition of *Yale Medicine* to view an expanding list of alumni with similar interests. You can write to us at ymm@yale.edu and view the list at yalemedicine.yale.edu.

"Alumni Career Paths" future topics:

- The front lines of clinical practice
- Academic medicine
- Sports medicine



Arthur Horwich



George Lister



Jorge Galán



John Carlson

Shaw prize for protein folding studies

ARTHUR HORWICH, M.D., HS '78, Sterling Professor of Genetics, professor of pediatrics, and a Howard Hughes Medical Institute investigator, received the Shaw Prize in Life Science and Medicine in May. Horwich is a co-winner, with his longtime collaborator Franz-Ulrich Hartl, M.D., PH.D., of the Max Planck Institute of Biochemistry, for their research on how proteins fold into their functional state. The award, which comes with a \$1 million prize, was announced by the Shaw Prize Foundation in Hong Kong.

Horwich and Hartl found that specialized proteins called chaperonins help proteins fold correctly within the cell. Their findings have implications for treating several diseases, because improperly folded proteins can clump together and are implicated in such neurodegenerative illnesses as Parkinson disease, Alzheimer disease, Huntington disease, mad cow disease, and amyotrophic lateral sclerosis, also known as Lou Gehrig's disease.

The Shaw Prizes, three annual awards in astronomy, life science and medicine, and mathematical sciences, honor living individuals who have achieved breakthroughs in academic and scientific research. The prizes are dedicated to furthering societal progress, enhancing quality of life, and enriching humanity's spiritual civilization.

Pediatric chair named after national search

GEORGE LISTER, M.D. '73, HS '75, has been named chair of pediatrics, chief of pediatrics at Yale-New Haven Hospital (YNHH), and physician in chief at Yale-New Haven Children's Hospital, marking his return to the school where he studied medicine, completed his residency, and served on the faculty for more than 20 years. Lister comes from the University of Texas Southwestern Medical School, where he is the Robert L. Moore Chair of Pediatrics. He is also pediatrician in chief at Children's Medical Center Dallas. He replaces CLIFFORD BOGUE, M.D., who has served as interim chair since 2010.

After completing his residency and fellowships, Lister joined the faculty at the University of California, San Francisco, in 1977. He returned to Yale and YNHH in 1978, where he became professor of pediatrics and of anesthesiology. He founded the Section of Critical Care and Applied Physiology and was its chief for more than 20 years. In 2003 he moved to UT Southwestern.

In 1992 Lister was appointed by the National Institute of Child Health and Human Development to chair the steering committee of a national study of the Collaborative Home Infant Monitoring Evaluation, a program intended to test the rationale for home monitoring of infants at risk for SIDS. He has been an active member of the American Pediatric Society and the Society for Pediatric Research.

Two named to National Academy of Sciences

Two Yale professors were elected to the National Academy of Sciences (NAS) in May. **JORGE GALÁN, PH.D., D.V.M.,** the Lucile P. Markey Professor of Microbial Pathogenesis, professor of cell biology, and chair of the Section of Microbial Pathogenesis, and **JOHN CARLSON, PH.D.,** the Higgins Professor of Molecular, Cellular, and Developmental Biology, were among 84 new members and 21 foreign associates elected this year.

Galán is renowned for his research on the cell biology, biochemistry, immunobiology, and structural biology of the bacterial pathogens *Salmonella* and *Campylobacter*, which together cause most of the world's food-borne illness. His lab discovered novel molecular mechanisms that lead to infection and illness and represent potential targets for a new class of antimicrobials. Galán was recruited to Yale in 1998 to launch the section, and has since expanded it into a team of eight scientists who bring a variety of research methods to bear on infectious diseases ranging from tuberculosis and Legionnaires' disease to tropical parasitic diseases.

Carlson's work has advanced the fight against infectious diseases like malaria that are spread by insects. Carlson is one of the world's experts in insect olfaction. His group discovered a family of 60 genes that encode odorant receptors in *Drosophila*. In one experiment, Carlson's lab activated mosquito olfaction genes in a fruit fly, enabling researchers to identify chemicals in human sweat that attract mosquitoes.

Two faculty members take jobs in Washington

MIRIAM DELPHIN-RITTMON, PH.D., assistant professor of psychiatry, has accepted a political appointment in the administration of President Barack Obama as senior advisor to the administrator in the Substance Abuse and Mental Health Services Administration Office of Policy, Planning, and Innovation. Delphin-Rittmon will work on policy issues including the elimination of disparities; data, quality and evaluation efforts; and behavioral health service definitions. She has served as the director of the Office of Multicultural Affairs in Connecticut's Department of Mental Health and Addiction Services and as director of Cultural Competence and Health Disparities Research and Consultation in Yale's Program for Recovery and Community Health.

PHILIP RUBIN, PH.D., CEO of Haskins Laboratories and adjunct professor in the Department of Surgery (Otolaryngology), was appointed to key roles at the White House and the National Science Foundation in March. Rubin was named assistant director for social, behavioral, and economic sciences in the Executive Office of the President's Office of Science and Technology Policy. He will also serve as a senior advisor in the National Science Foundation's Social, Behavioral, and Economic Sciences directorate.



Diane Krause



Melinda Pettigrew



Peter Cresswell



Jonathan Demb



John Elefteriades



Jack Elias



Myron Genel



Valentina Greco

Diane Krause, M.D., PH.D., professor of laboratory medicine, of cell biology, and of pathology, and associate director of the Yale Stem Cell Center, and **Melinda M. Pettigrew**, PH.D., associate professor of epidemiology (microbial diseases), and associate dean for academic affairs in the School of Public Health, have been selected to participate in Executive Leadership in Academic Medicine, a year-long leadership training program for women in medicine.

Fifteen Yale faculty members, including 11 from the School of Medicine, were inducted into the Connecticut Academy of Science and Engineering in May at the academy's annual meeting. The inductees from the School of Medicine are **Susan J. Baserga**, M.D. '88, PH.D. '88, professor of molecular biophysics and biochemistry, of genetics, and of therapeutic radiology; **Linda K. Bockenstedt**, M.D., Harold W. Jockers Professor of Medicine (rheumatology); **Sharon W. Cui**, PH.D., senior research scientist; **Pietro De Camilli**, M.D., FW '79, the Eugene Higgins Professor of Cell Biology, professor of neurobiology, and a Howard Hughes Medical Institute investigator; **Ronald S. Duman**, PH.D., the Elizabeth Mears and House Jameson Professor of Psychiatry and professor of neurobiology and of pharmacology; **Jo Handelsman**, PH.D., the Frederick Phineas Rose Professor of Molecular, Cellular and Developmental Biology; **Kevan C. Herold**, M.D., professor of immunobiology and medicine (endocrinology); **William L. Jorgenson**, PH.D., Sterling Professor of Chemistry and director of the Division of Physical Sciences and Engineering; **Nancy A. Moran**, PH.D., the William H. Fleming, M.D. Professor of Ecology and

Evolutionary Biology; **W. Mark Saltzman**, PH.D., the Goizuetta Foundation Professor of Biomedical Engineering and professor of cellular and molecular physiology and of chemical engineering; and **Scott A. Strobel**, PH.D., the Henry Ford II Professor of Molecular Biophysics and Biochemistry, professor of chemistry, and Howard Hughes Medical Institute investigator.

Henry Binder, M.D., FW '65, senior research scientist and professor emeritus of medicine, received the Solomon A. Berson Medical Alumni Achievement Award in Clinical Science from the NYU School of Medicine in May. The award goes to a graduate of the NYU School of Medicine who has distinguished himself or herself by major accomplishments in clinical medical research. Binder has studied the regulation of colonic electrolyte transport, yielding knowledge of the pathophysiology of and improved treatment for diarrheal disorders, which has directly helped rural and developing peoples.

Peter Cresswell, PH.D., Eugene Higgins Professor of Immunobiology, professor of cell biology and of dermatology, and a Howard Hughes Medical Institute Investigator, received the AAI-Life Technologies Meritorious Career Award in May from the American Association of Immunologists for his contributions in the area of antigen processing and presentation.

Jonathan Demb, PH.D., associate professor of ophthalmology and visual science and of cellular and molecular physiology, received the Cogan Award in May from the Association for Research in Vision and Ophthalmology. The award

recognizes a researcher who is 40 or younger who has made important contributions to research in ophthalmology or visual science.

John A. Elefteriades, M.D. '76, HS '83, the William W.L. Glenn Professor of Cardiothoracic Surgery, was elected to the International Academy of Cardiovascular Sciences. The academy provides the organizational structure for worldwide sharing of research and educational information in the field of heart health.

Jack Elias, M.D., professor of medicine and chair of the Department of Internal Medicine, delivered the J. Burns Amberson Lecture at this year's American Thoracic Society 2012 International Conference in San Francisco in May. This lecture honors individuals who have made major lifetime contributions to clinical or basic pulmonary research and/or clinical practice.

Myron Genel, M.D., professor emeritus and senior research scientist in pediatrics, has received the 2012 Stepping Up for Children Award from the Stepping Stones Museum for Children in Norwalk, Conn. The award recognizes individuals, nonprofit organizations, or companies that demonstrate a commitment to improving and enriching the lives of children and families.

Valentina Greco, PH.D., assistant professor of genetics, is the recipient of a 2012 Research Scholar Grant from the American Cancer Society to support her project, "Stem Cell Deregulation during Tumor Regression."

Tamas Horvath, D.V.M., PH.D., chair of the Section of Comparative

Medicine and director of the Yale Program in Integrative Cell Signaling and Neurobiology of Metabolism, received the 2012 Ernst Oppenheimer Award in June, one of the Endocrine Society's Laureate Awards. Horvath's work over the last 15 years has played a key role in the development of the currently accepted model of neuroendocrine regulation of energy balance.

Joan A. Steitz, PH.D., Sterling Professor of Molecular Biophysics and Biochemistry, received the degree of doctor of science *honoris causa* from Rockefeller University in June. Steitz is best known for discovering and defining the function of small nuclear ribonucleoproteins, cellular complexes that play a key role in the splicing of pre-messenger RNA, the earliest product of DNA transcription.

Hugh Taylor, M.D., professor of obstetrics, gynecology, and reproductive sciences, and director of the Division of Reproductive Endocrinology and Infertility, was selected by the Endometriosis Foundation of America as its 2012 honoree in March.

Howard Zonana, M.D., professor of psychiatry, received the 2012 Isaac Ray Award from the American Psychiatric Association and the American Academy of Psychiatry and the Law in May. This honor was awarded for Zonana's decades of leadership and outstanding achievements in forensic psychiatry.

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Medical care and human rights in Uganda

Doctors' practice of detaining patients who can't pay their bills is focus of a student's documentary.

Esther sits outside her mud hut home in front of a rust-red tree framed by the lush vegetation of the central Ugandan countryside and tells her shocking story. For more than two months her doctor had imprisoned her behind a locked gate and barbed wire-topped fence. She received no food, relying for sustenance on visitors and her son, whom the doctor also detained and compelled to work as a guard and laborer.

The reason for the detention: Esther owed \$65 of \$200 for an operation that cured her of a crippling disease. But Esther is reluctant to condemn the doctor too harshly. He operated on her when no one else would.

"I just pray that God forgives him for what he has done," she said.

Esther plays a pivotal role in a documentary by Michael Otremba, M.D. '12,

which explores the detention of Ugandan patients unable to pay their bills. The movie is titled *Twero*, which means "right to health" in Luo, the language of that part of Uganda. Otremba, who devoted his fifth year at the School of Medicine to the project, wanted to combine his interests in human rights and the visual arts. He paints, and as a first-year student he organized a Christo-like art project that involved wrapping anatomy tables in pink ("End Note," *Yale Medicine*, Autumn 2008). Although Otremba had been to Uganda twice, he knew nothing about film.

In stepped Gretchen K. Berland, M.D., associate professor of medicine, an accomplished documentary filmmaker, and recipient of a MacArthur "genius" grant, whose work includes the award-winning *Rolling* about wheelchair users. Berland schooled Otremba in moviemaking, provided weekly advice by phone during six months of filming in Uganda, and helped edit 50 hours of raw footage. She was careful to ensure that the film remained Otremba's. "It's very easy for the mentor, as someone with more experience, to take over," Berland said.

Berland's assistance was crucial, Otremba said. Her most valuable insight: interviewing documentary subjects is like interviewing patients. In both cases, you are asking them to open up and tell truths. Berland also helped Otremba with an ethical dilemma when he filmed a father who

could afford malaria medication for only one of his two daughters. Otremba arranged treatment for both girls.

What appears to be a black-and-white story isn't; and conveying that reality is the film's biggest challenge. "In some ways, there's an understanding of the doctors' plight," Otremba said. "Only 60 percent of Ugandan physicians stay in the country, and not many are willing to work in these rural areas. I don't think in any way it's okay. But it is difficult when you meet a bunch of physicians. They make so little money, and they are the only ones around."

A doctor who detains patients—not the one who treated Esther—justified the practice, saying he needs to pay his bills. He added that he always treats first even though he knows that 30 to 40 percent of patients can't pay the full fee. "It's a controversial and disturbing practice," Berland said. "Patient detention is part of a larger set of responses to an inadequate health system."

Patient detentions are a symptom of larger systemic problems, including corruption, funding shortages, and a culture maimed by years of civil war, Otremba said. He hopes to enter his 30-minute movie in human rights film festivals and plans to show it to policy makers in human rights, but isn't about to give up his stethoscope. "This reinforced that I want to be a doctor," he said. "I like being able to help."

In August Otremba learned that he had received one of six awards conferred in 2012 by the international consortium, Networked Digital Library of Theses and Dissertations, for his film. The awards recognize students who have written exemplary electronic theses and dissertations. *Twero: The Road to Health* can be viewed at vimeo.com/47748677. The password is twerofilm.

—Christopher Hoffman



TERRY DAGHADI

Gretchen Berland, a physician and award-winning documentary filmmaker, served as a mentor to medical student Michael Otremba as he made a film about the provision of medical care and human rights in Uganda.

got me interested in exploring what a medical career could look like.

"Medicine is not immune to market forces," he said, but added that few people understand both "the realities of business ... (and) the nuances and human side of clinical medicine."

During his first year at Yale, Downing approached Ross and Harlan Krumholz, M.D., the Harold H. Hines Jr. Professor of Medicine (cardiology) and professor of investigative medicine and of public health (health policy), and the director of the Robert Wood Johnson Foundation Clinical Scholars Program, about a summer research project. Ross and Krumholz were interested in research about the pharmaceutical industry, and Downing had business experience in pharmaceuticals—the perfect partnership.

The idea for the FDA study emerged from the impending reauthorization of the Prescription Drug User Fee Act (PDUFA), which was first enacted in 1992 to allow the FDA to collect fees from drug companies to fund the process of new drug approval. In addition, there had been "a lot of noise about the FDA being slow" in the media, Downing said.

But this need for speed must be balanced by quality assurance, Downing added. As a result, it wasn't clear what the appropriate speed might be, so the team decided to compare the FDA with peer agencies in Europe and Canada.

The team found that the FDA reviewed applications for new molecular entities or biologic drugs more rapidly on average than the European Medicines Agency and Health Canada from 2001 to 2010. Downing's team found that the FDA completed its initial reviews 50 to 60 days ahead of the other two agencies, with its median time for completion being 303 days. And for 72 drugs that were approved by all three agencies, the FDA's first review time was about 100 days faster. For those drugs approved in at least two regions, two-thirds were first approved in the United States.

FDA review process faster than in other countries, med student reports in NEJM

Somewhere between his board examinations and his wedding this spring, medical student Nicholas Downing found time to be the lead author on a paper published in a prestigious clinical journal. The paper, published online in May and in print in June in *The New England Journal of Medicine*, challenges criticism that the Food and Drug Administration's (FDA) drug review process is too slow. According to the paper, the FDA approved drugs faster on average than peer agencies in Europe and Canada between 2001 and 2010.

"It's a huge accomplishment," said Joseph Ross, M.D., M.H.S. '06, assistant professor of medicine and senior author of the paper.

And it's not Downing's first publication. He also published a paper in April in *Archives of Internal Medicine* describing how a pharmaceutical company used reformulations to dominate the market for fenofibrate, a drug given to treat high cholesterol levels, for over a decade despite numerous generic formulations of the drug.

Downing, an American citizen, grew up in London and attended Harvard, graduating in 2007 with a degree in chemistry. He then worked for three years at McKinsey & Company, an international management consulting firm. As a business analyst and engagement manager, Downing worked mostly with pharmaceutical companies and, to a lesser extent, with hospitals. "I didn't really understand the clinical and human side of medicine," he said, "and that was kind of a stimulus that



JOHN CURTIS

Nicholas Downing's research into how long it takes the FDA to approve novel therapies was published in *The New England Journal of Medicine*.

The report concludes that given the FDA's lead over its peer institutions, criticisms about the inefficiency of the agency's review process for novel drugs may be unfounded.

The study is important because "it injected some objective information into what had become a relatively subjective debate," Downing said. PDUFA V, the fourth reauthorization of the 1992 act, was signed into law by President Barack Obama on July 9.

Downing said the team's next step is to examine the quality of the FDA's drug reviews. "I think it's the responsibility of every physician to understand the safety and efficacy profile of every single drug that they use," he said.

—Natalie Villacorta

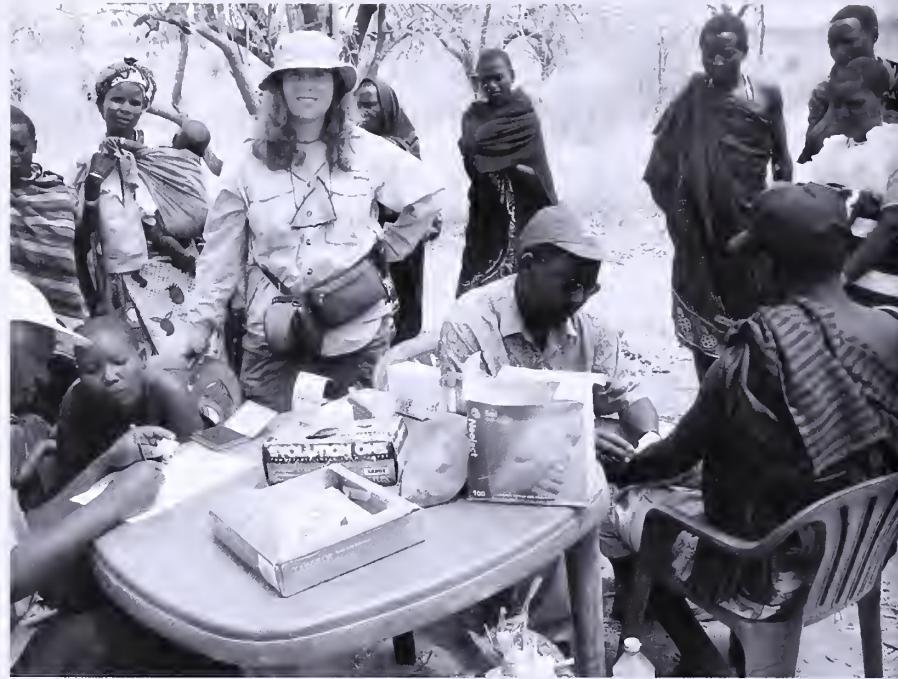
Seeking a continent's history in its DNA

A Yale alumna finds clues to agriculture, malaria, lactose tolerance, and pygmies' stature in Africans' genes.

Sarah Tishkoff, PH.D. '96, has lost count of the trips she's made to Africa since 2001 to study the continent's genetic history. "By looking at your blood," she explains to sub-Saharan villagers, "we can learn something about your mother, your father, your grandparents."

Through the villagers' DNA, Tishkoff has traced the history of malaria and dairy farming. She's suggested a link between pygmies' stature and a genetic mutation that strengthens their immune systems. She's found the common ancestors of East Africa's only two click-speaking populations. And her studies reveal greater genetic diversity among Africans than in any other ethnic group and suggest that all humans came from Africa more recently than previously believed.

Her most recent research, featured on the cover of the August 3 issue of the journal *Cell*, analyzed the fully sequenced genomes of 15 Africans from three hunter-gatherer groups. The study—which she described as the first high-coverage whole-genome population genomics study in humans and the most extensive in Africa—identifies several million previously unknown genetic mutations in humans, finds evidence that the direct ancestors of modern humans may have interbred with members of an unknown ancestral group of hominins, and suggests that different groups evolved distinctly in order to reap



nutrition from local foods and defend against infectious disease. "Our analysis sheds light on human evolution, because the individuals we sampled are descended from groups that may have been ancestral to all other modern humans," Tishkoff said. "A message we're seeing is that even though all the individuals we sampled are hunter-gatherers, natural selection has acted differently in these different groups."

Her work has attracted attention from *Scientific American*, *National Geographic*, and PBS's *Nova*. But none have been more interested than the villagers themselves. "In one village, a man had a copy of the Jehovah's Witnesses' magazine *Watchtower* with a picture of a double helix in it. He asked me, 'That's what you're studying, right?' I said, 'That's right.' And he said, 'So could you trace where the blacks in the U.S. are from?'"

Studies of Africans were scarce when Tishkoff came to Yale in 1989. Her advisor, Kenneth K. Kidd, PH.D., professor of genetics, of ecology and evolutionary biology and of psychiatry, had DNA samples from just two African populations in his lab. "The Mbuti and Biaka Pygmies from Central Africa are probably the least

representative of African populations, but nobody knew that at the time," said Tishkoff, the David and Lyn Silfen University Professor in the departments of genetics and biology at the University of Pennsylvania Perelman School of Medicine.

Tishkoff found more than she expected in those samples, specifically in a stretch of DNA on chromosome 12. "All Europeans looked similar to each other. All Asians looked similar to each other. But I wasn't seeing anything similar in these African groups," she said. "So I looked through the literature, contacted the people who were studying Africans, asked if they'd like to collaborate; they sent some DNA, and we ended up publishing in *Science* in 1996."

In the study, Tishkoff, Kidd, and their collaborators revealed more genetic diversity among sub-Saharan Africans than among Northern Africans or non-Africans and suggested that humans came from Africa about 100,000 years ago. While researchers already favored the Out-of-Africa theory over a multi regional theory, Tishkoff's study was the first to support it by using the same type of DNA used in forensics—nuclear DNA, which reveals more about an

Sarah Tishkoff is seeking clues to Africa's genetic history and, through DNA samples, has traced the history of malaria and dairy farming and found a possible clue to pygmies' stature. In Tanzania in 2001 she collected blood samples from villagers.

individual's evolutionary history than does mitochondrial DNA.

When scrutiny of other genes continued to suggest that Africans differed more widely from one another than from anyone else, Tishkoff wanted to know the continent's entire genetic history. She started in South Africa in 1997, where, as a postdoc at the University of Witwatersrand, she first heard about the Hadza and Sandawe of Tanzania. Though the two groups are the only click-speakers in East Africa, no one knew whether they are related. Tishkoff had to find out.

While waiting for local permissions for studies in Tanzania and Ethiopia (it took years), she continued her postdoctoral work at Pennsylvania State University, studying a gene related to malaria resistance. By determining when the gene first appeared in African populations, Tishkoff and her colleagues provided support for a long-held theory that malaria became endemic only after agriculture had been introduced.

Tishkoff was a professor at the University of Maryland when she and her team finally got permission to conduct her studies in Tanzania in 2001. She traveled the country in a Land Rover whose floor had almost completely rusted out. The vehicle, however, proved its worth—the team connected their centrifuge to that rusty Land Rover to process blood samples. The Bush Lab, as they dubbed the vehicle, helped Tishkoff, students, and collaborators learn that the click-speakers' last common ancestors had lived 15,000 years ago. The languages and the people were barely related. The team also linked the gene

responsible for lactose tolerance in Africans to the beginning of African dairy farming 7,000 years ago.

African collaborators, including researchers, nurses, and schoolteachers, are a major key to Tishkoff's success. Through a study of 121 African populations, four African American, and 60 non-African populations, Tishkoff and her collaborators have shown that Africans have the highest level of intrapopulation genetic diversity. The knowledge that Africans are more diverse than other populations will affect future study designs and biomedical research and—Tishkoff hopes—encourage further study.

Throughout her work, Tishkoff has trained numerous African scientists from high school to the postdoctoral level to carry on research in Africa themselves. "That's one of the things I am most proud of."

—Sonya Collins

Africa beckons two Yale practitioners after long careers in medicine

Three years ago, an unexpected postcard arrived in the Denver mailbox of Christopher (Kip) Doran, M.D. '73, and Maureen O'Keefe Doran, M.S.N. '71. It was an invitation to a reception for potential Peace Corps volunteers over the age of 50. Intrigued, they went. As they walked out Kip recalled, "We looked at each other and said, 'We could do that.'"

The Dorans had spent 30 years in Denver, where they lived, worked, and raised two daughters. Both taught at the University of Colorado, both were heavily involved in community organizations, and both had private practices—Kip in psychiatry and Maureen as a mental health nurse practitioner. It wasn't easy to disengage, and yet the prospect of such an adventure felt like "a second breath of life."

So they signed up and as they wound down their practices, they learned they would be sent to Botswana. They flew to Africa, where a three-month home stay with a Botswana family immersed the Dorans in language, culture, and HIV issues (a quarter of young adults in Botswana are HIV-positive). They settled into Ramotswa, a town of 28,000 about 45 minutes from the capital. There they served from April 2009 to June 2011 as teachers and mentors. Though neither Doran was permitted to work clinically with patients, they used their teaching skills in medicine. Kip planned and implemented educational activities at the district AIDS coordinator's office while Maureen taught high school guidance classes, helping students build self-esteem and leadership skills with an eye to HIV prevention. They wrote a textbook teaching parents how to talk to children about sex, sexuality, and HIV. And they taught a mental health course at the newly opened national medical school, encouraging students to study medicine in "the American way" of learning, group discussion, role-playing,

Kip and Maureen Doran put their private practices in Denver on hold to join the Peace Corps and work as teachers and mentors in Botswana for two years. They also found time to visit the Mokolodi Nature Reserve, a protected environmental and conservation area outside the capital, Gaborone.



COURTESY OF CHRISTOPHER AND MAUREEN DORAN

and interview practice. It went over well with the students, who gave the class top satisfaction ratings. All in all, said Maureen, Botswana “was a wonderful match for us.”

Far from being a hindrance, the Dorans’ age worked in their favor. “Age is respected in Botswana culture,” said Kip—he was 63 and his wife 62 when they began their service. “I was male, I was older, and I was a physician. When I talked, people listened.” Maureen agreed, recalling that when villagers greeted them in Setswana with “*Dumela mogolo*” (Hello, old people!), it was “the highest compliment you could get.”

Maureen noted that being older allows Peace Corps volunteers to stay focused and keep the long view during difficult moments. Taking time off

to work abroad may also be easier for older people than for those in midlife who are still establishing careers. Since the early 2000s, the Peace Corps has actively recruited older volunteers, in part by reaching out to AARP members. By 2005, 6 percent of Peace Corps volunteers were older than 50, up from 1 percent in previous decades.

Regardless of volunteers’ ages, though, the Peace Corps is no vacation. The Dorans commuted on foot and brought groceries home in backpacks; their house was unheated, and they were often cold. There were disturbing incidents, like a student death from HIV-related meningitis. Hardest was refraining from meeting problems with culturally unworkable solutions. When faced with a problem, said Maureen,

“You have to be able to be quiet with yourself, to look and see how the locals are doing it. ... Things get done, but not with the speed or efficiency we would sometimes have wished for.”

“One of the things that impressed me is [that] it’s hard to help,” said Kip. Even with funding from large organizations like the Gates Foundation or PEPFAR, he said, “It’s hard to use that money wisely and intelligently.”

The Dorans’ Peace Corps service continues in a new way. One of the organization’s goals is promoting Americans’ understanding of other cultures; Kip and Maureen have taken that to heart, giving frequent presentations about their two years in Botswana. They’ve come a long way from their first uncertain days as foreign volunteers. “I kept saying to Kip, ‘I don’t like change! Why am I doing this? I like stability!’” Maureen recalled. “But I’m very, very glad that we did.”

“It’s something to do for America,” she added, “for your country. I don’t think it’s ever too late to consider doing that.”

—Jenny Blair, M.D. ’04

Familiar Faces

Do you have a colleague who is making a difference in medicine or has followed an unusual path since leaving Yale? We’d like to hear about alumni of the School of Medicine; Physician Associate Program; and the medical school’s doctoral, fellowship, and residency programs. Drop us a line at ymm@yale.edu or write to *Faces*, Yale Medicine, 1 Church Street, Suite 300, New Haven, CT 06510.



Philip Di Saia

Edward Halperin

C. Seth Landefeld

John Patti

Kenneth Andreoni

Jeffrey Carpenter

Cynthia Lord

Robin Smith

1950s

Robert J.T. Joy, M.D. '54, received the 2012 Lifetime Achievement Award from the American Association for the History of Medicine. The Lifetime Achievement Award is given annually to a member of the association who has retired from regular institutional affiliation or practice with a distinguished record of support for the history of medicine and has made continuing scholarly contributions of a distinguished nature.

1960s

A chair has been established at the University of California, Irvine, in recognition of **Philip J. Di Saia, M.D.**, HS '67, and his more than 30 years of service to the Department of Obstetrics and Gynecology's Division of Gynecologic Oncology. Di Saia, the former chief of the division, helped the school become a leader in women's cancer care. Robert Bristow, M.D., was named the inaugural holder of the Philip J. Di Saia Prestigious Chair in Gynecologic Oncology in January.

Arthur I. Eidelman, M.D., HS '67, FW '67, has been elected president of the Academy of Breastfeeding Medicine. As chair of the policy committee of the section of breastfeeding of the American Academy of Pediatrics (AAP), he is the lead author of the new AAP policy statement on breastfeeding, published in *Pediatrics* in March 2012.

David J. McConnell, M.D. '62, has been named clinical professor emeritus of medicine at Columbia University College of Physicians and Surgeons.

1970s

Edward C. Halperin, M.D. '79, has been named chancellor for health affairs, chief executive officer, and professor of radiation oncology, pediatrics, and history at New York Medical College in Valhalla, N.Y. He was also named vice provost for biomedical affairs of the Touro College and University System. Halperin was previously dean of the school of medicine and vice provost of the University of Louisville in Kentucky.

C. Seth Landefeld, M.D. '79, has been named chair of the Department of Medicine at the University of Alabama at Birmingham. Landefeld, an internationally known clinician and researcher in geriatrics, epidemiology, and biostatistics, previously served as chief of the Division of Geriatrics and associate chair for strategic planning and implementation of the Department of Medicine at the University of California, San Francisco.

John A. Patti, M.D. '71, was elected president of the American College of Radiology (ACR) in May. Patti, the immediate past chair of the ACR Board of Chancellors, is a thoracic radiologist at Massachusetts General Hospital and a member of the faculty of Harvard Medical School.

1980s

Kenneth Andreoni, M.D. '88, was elected vice president/president-elect of the United Network for Organ Sharing, which manages the nation's organ transplant network under federal contract.

Jeffrey P. Carpenter, M.D. '86, has been named the inaugural chair of the Department of Surgery at the newly formed Cooper Medical School of Rowan University in Camden, N.J. He was previously professor of surgery at the University of Pennsylvania.

Barbara G. Fallon, M.D. '80, has been named medical director of the breast program at the Hospital of Central Connecticut in New Britain. Fallon, a hematologist-oncologist, was previously in private practice.

1990s

Cynthia B. Lord, M.H.S., PA-C '91, a clinical associate professor in Quinnipiac University's PA program, received the 2012 Outstanding PA of the Year Award from the American Academy of Physician Assistants at its annual conference in Toronto in May.

Robin L. Smith, M.D. '92, M.B.A., has been chair of the advisory board of NeoStem, a leader in the development and manufacturing of cellular therapies, since 2005, and in 2006 became the chief executive officer and chair of the board. She is the president and serves on the board of the Stem for Life Foundation, a nonprofit and nonpartisan organization.

2000s

Phillip P. Chan, M.D. '00, PH.D. '00, CEO of CytoSorbents Corporation, was named a finalist in the Ernst & Young Entrepreneur of The Year® 2012 program in the New Jersey region. The award recognizes entrepreneurs who have demonstrated success in

such areas as innovation, financial performance, and personal commitment to their businesses and communities. Chan has been CEO and president of the company since 2009.

Garth N. Graham, M.D. '01, M.P.H. '01, has been named to the advisory board of LodgeNet Healthcare, a company that develops evidence-based, customizable tools that enable hospitals to engage patients and their families before, during, and after hospitalization. Graham is the assistant dean for health policy and the chief of the Section of Health Services Research at the University of Florida College of Medicine.

2010s

Elliot J. Rapp, M.D. '11, received the 2012 Massachusetts Medical Society's Information Technology Award in June for his project Cube Knowledge, a software-based learning platform for self-testing and spaced repetition suited to the study of medical information. Rapp began a diagnostic radiology residency at the University of Washington in July.

SEND ALUMNI NEWS TO

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in memoriam

Arthur Edward Baue, M.D., the former chair of the Department of Surgery at Yale, died at home in Hamden, Conn., on December 28, 2011. He was 82. Baue devoted much of his career to the study of shock following trauma and is credited with defining the concept of posttraumatic multiple organ failure in the care and study of injured patients. A graduate of Harvard Medical School, he performed his general surgery training at Massachusetts General Hospital before pursuing advanced thoracic surgical training in 1962 at the Frenchay Hospital in North Bristol, England. He then returned to the United States; after a year at the University of Missouri School of Medicine, he was recruited by the University of Pennsylvania in 1963. Baue returned to Missouri in 1967 as the surgeon in chief and Edison Professor of Surgery at the Jewish Hospital of St. Louis. In 1975 he was recruited to Yale as the Guthrie Professor and chair of the Department of Surgery as well as surgeon in chief of Yale-New Haven Hospital. He returned to St. Louis University Medical Center as a professor of surgery in 1985 and retired in 1997.

James J. Fischer, M.D., PH.D., HS '65, chair of the Department of Therapeutic Radiology at the School of Medicine from 1972 to 2002, died while running on the beach near his home in Madison, Conn., on February 22. He was 75. Fischer received his undergraduate degree from Yale in 1957, his medical degree from Harvard in 1961, and his PH.D. in 1964. He conducted pioneering studies on the use of nuclear magnetic resonance to study enzyme complexes, publishing a seminal paper on the topic in *Nature* in 1963. He returned to Yale in 1964 for an internship in internal medicine under Paul Beeson, M.D., then trained as a clinical and research fellow in the Department of Radiology. Fischer was named the Robert E. Hunter Professor when radiation therapy became a free-standing department in 1972. He was

also appointed chair of the new department, a position he held until 2002.

Gilbert H. Glaser, M.D., the founding chair of the Department of Neurology, died on January 21, 2012, at the Hospital of Saint Raphael in New Haven. He was 91. Glaser was a professor emeritus at the School of Medicine and considered an international authority on epilepsy. He is widely acknowledged as one of the founders of neurology as an independent discipline.

Glaser received his undergraduate and medical degrees from Columbia University and trained at the Neurological Institute of Columbia University. From 1946 through 1948, he served as director of the electroencephalography laboratory at Brooke Army Medical Center in Texas. Glaser was an assistant attending and chief of the neurology clinic at the Neurology Institute in New York before moving to Yale in 1952 as assistant professor and head of the Section of Neurology, then a division within the Department of Medicine. He was appointed a full professor in 1963. Neurology became a free-standing department in 1971, with Glaser serving as its chair until his semireirement in 1986. He retired fully in 1991.

John P. Hayslett, M.D., HS '66, FW '67, professor emeritus of medicine and founding chief of the Section of Nephrology, died at Connecticut Hospice on April 15. He was 77. Hayslett earned his medical degree in 1960 from Cornell University Medical College. He came to Yale in 1960 and served in administrative roles, including director of the Dana Medical Clinic, president of the medical staff of Yale-New Haven Hospital, and medical director of the Yale Physician Associate (PA) Program. A tireless advocate of

the PA profession, he revised the curriculum to allow the program to confer the master of medical sciences degree and advised students and faculty on their research projects. An inpatient medicine team at the VA Connecticut Healthcare System's West Haven campus was named in his honor in 2011 in recognition of his outstanding service as a clinician and educator at that institution.

Howard M. Spiro, M.D., the founding section chief of gastroenterology in the Department of Internal Medicine and founding director of the Yale Program for Humanities in Medicine, died on March 11 in Branford, Conn., after a brief illness. He was 87.

Spiro graduated from Harvard College in 1944 and received his medical degree from Harvard in 1947. After completing an internship at the Peter Bent Brigham Hospital (now Brigham and Women's Hospital), he remained there to pursue research, primarily on gastrointestinal physiology. After serving for two years in the military as chief of gastroenterology at Madigan Army Hospital in Tacoma, Wash., he returned to Boston to spend two years in research at Massachusetts General Hospital.

Spiro was recruited to Yale in 1955 by Paul Beeson, M.D., to establish the first full-time academic gastroenterology section at Yale. His ambition was to establish a nationally recognized academic research section of gastroenterology and to incorporate both medical and psychological concerns in the teaching and provision of patient care. Spiro was well-known for his strong dedication to patients and bedside teaching.

In 1965 he established the Yale-Affiliated Gastroenterology Program, an educational collaboration among fellowship training programs in south-central Connecticut. He was a prolific writer, with publications ranging from his textbook *Clinical Gastroenterology* and scientific peer-reviewed papers to the

popular books *Doctors, Patients and Placebos*; *When Doctors Get Sick*; and *Facing Death*. Spiro, along with Enid Peschel, PH.D., a medical researcher and educator, established the Yale Program for Humanities in Medicine in 1982. Students, faculty, and members of the public would gather weekly to sip sherry and listen to speakers address topics breaching the boundaries between medicine and the humanities, including art history, music, and politics.

Raymond S. Yesner, M.D., professor emeritus of pathology, former associate dean of the School of Medicine, and senior research scientist, died at his home in Woodbridge, Conn., on February 8. He was 97.

Yesner's education began in a one-room schoolhouse in Wellington, Maine; he later attended P.S. 19 in New York City before high school at Boston Latin. At 16, he graduated with an academic scholarship to Harvard College. He chose Tufts for his medical education and completed his internship and residency at the Beth Israel Hospital in Boston. Yesner joined the School of Medicine in 1947 as an assistant professor and became chief of laboratory medicine at the VA Hospital in West Haven in 1953. He served as associate dean of the School of Medicine from 1968 to 1974. In 1969 he was promoted to chief of staff of the VA. He served as director of the electron microscope laboratory there until he became the director of the autopsy service at Yale. Yesner made significant contributions to the understanding of lung tumors and their pathology.

SEND OBITUARY NOTICES TO
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Commencement 2012

Richard Belitsky presented Lara Rosenberg with her diploma at the Class of 2012 Commencement in May. One hundred medical students received their diplomas and heard from keynote speaker neurosurgeon Ben Carson. For more on Commencement, visit medicine.yale.edu/Commencement2012.aspx.

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Yale Medicine

Levin steps down as
Yale's president

An electronic medical
record comes to Yale

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WINTER 2013

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*Chalk Illustrations by Jennifer Stockwell,
photos by Kelly Jensen*

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On our website, readers can submit class notes or a change of address, check the alumni events calendar, arrange for a lifelong Yale e-mail alias through the virtual Yale Station, and search our electronic archive.

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VISIT US ON THE WEB

Our new website is up and running—and the feedback has been wonderful! Visit us at yalemedicine.yale.edu and peruse the newest issue or issues going back to 1998.

How words can give comfort

It's Day Two of the Hospital of Saint Raphael becoming part of Yale-New Haven Hospital. Since I came to the United States of America five years ago, New Haven has been my home and Saint Raphael's, my family. I walk in—it's the same building, mostly the same people, the same routine, but also there is a distinct difference. New ID badges, new e-mail IDs, and new policies; the familiar place is suddenly a bit alien. I am on the medicine consult service; and in between doing a preoperative evaluation and placing an NG tube in an anorexic patient, I find myself wandering toward the library. There are a myriad of things to read, especially in the journal section. My eyes fall on a colorful journal on the lowermost shelf of the rack. I pick it up—it's *Yale Medicine*, Winter 2012. I had never noticed it before. As I browsed through its 33 pages, I found myself reading every page of it and actually enjoying it.

The article that caught my attention was "Doctors Who Write," by Cathy Shufro. That article struck a chord with me, made me happy, and somehow made me feel like I belong. It is amazing to see how words can give comfort. In this time of transition from the Hospital of Saint Raphael to Yale, where there was a sense of unfamiliarity, this article made me feel that there are people at Yale who enjoy what I enjoy—writing! I felt like some of the things said by Richard Selzer and Dagan Coppock came right out of my head—I had thought them but never said them. It felt calming. This is exactly what I needed today. I wanted to share my experience with you and thank you, for you have made me feel excited and hopeful about my Day Two—and my upcoming days as a part of Yale-New Haven Hospital.

*Safia Siddiqui, M.D.
Clinician-educator
Department of Medicine
Yale-New Haven Hospital*

Tribute to Arthur Ebbert rekindles memories

What a wonderful tribute to Arthur Ebbert in the Autumn 2012 edition of *Yale Medicine*! ["A gentle man," *Yale Medicine*, Autumn 2012] Art was very special. I met him prior to my arrival at Yale for my surgical residency in July 1970. As did Art, I graduated from the University of Virginia (UVA) undergraduate and medical schools, and had met Art at UVA alumni events while still a student in Charlottesville. His love for UVA and his adopted Yale were pervasive, and I enjoyed seeing him throughout my six years as a house officer in New Haven. The article in *Yale Medicine* portrayed him beautifully and captured his humility and grace.

I also want to thank you for the cover picture showing the aerial view of the Medical School campus. While I was a house officer, my wife and I lived in a house at 796 Howard Avenue and our "Memorial Unit" newborn daughter spent the first six months in that house. When these buildings were torn down in later years to make room for new construction, I was saddened that I had no pictorial remembrance of that old neighborhood on Howard Avenue. How wonderful it was to look at the cover honoring Art Ebbert and to view that house that was so important to me and my family in the mid-1970s. You see, having Art Ebbert at Yale and in my life continues to give me such rich memories.

*Frederick L. "Rick"
Greene, M.D., HS '76
Clinical Professor of Surgery
UNC School of Medicine
Chapel Hill, N.C.*

Great cover and great story about a great man!! I have keen memories of Dr. Ebbert's arrival at Yale in 1953 during my second year. My wife Rose was a secretary in the Yale Diagnostic Clinic for Dr. Beeson and she met Dr. Ebbert before I did. Her initial comment was "What

a charming man!" He indeed was a charm for the School of Medicine with his 34 years of devoted service.

*William Narva, M.D. '56
Rear Admiral, U.S. Navy (Ret.)
Los Angeles, Calif.*

Photo dating incorrect

As usual, *Yale Medicine* is splendid. I well recall Arthur Ebbert, M.D., and you have nicely and aptly summarized his key role at the school.

I might point out the incorrect dating of the full-page spread aerial photograph of the medical school campus on the second and third pages. It shows the medical school on Cedar Street, the hospital, and a bit of what was then named Grace-New Haven Hospital. However, Harkness Hall, the residence for medical students, is missing from the photograph—which shows a large empty field next to the pediatric section of the school. I lived in Harkness for four years beginning in 1956, the first year it opened. Since the caption says, "as it appeared during the 1960s," that is incorrect. Harkness was in place in the 1960s and there was no empty field between Grace-New Haven Hospital and the medical school.

Thank you for publishing the photograph, which reminded me of a glorious four years—the most important time of my life.

*Malin Dollinger, M.D. '60
Rancho Palos Verdes, Calif.*

FROM THE EDITOR

Many alumni wrote to point out the incorrect dating of the photograph mentioned above. As best we can determine, the photograph was taken about 1954.

CORRECTION

The End Note in the Autumn 2012 issue of *Yale Medicine* incorrectly identified the student in the photograph. Her correct name is Lara Rosenbaum.

We regret these errors.

No shortage of breaking news

People often ask how we come up with ideas for the articles that appear in *Yale Medicine*. There's no easy answer to that question. Ideas might come from a chance conversation, a tip from a scientist or clinician, or a writer's familiarity with a beat. We observe, discern patterns, develop a hypothesis, then look for information to confirm or deny that hypothesis—like scientists, we sometimes find ourselves following a path that leads nowhere. For this issue we had an abundance of important breaking news stories with significance not just for the medical school, but for the university and New Haven.

In August we learned that President Richard C. Levin would be stepping down after 20 years at the helm of the University. Two months later the Yale Corporation unanimously chose Provost Peter Salovey as his successor.

In September came the news, long anticipated, of Yale-New Haven Hospital's acquisition of the Hospital of Saint Raphael. Over the years we've covered the history of medical care in New Haven and the evolution of the city's various hospitals through mergers and acquisitions. Now only one hospital remains in the city.

And both feature stories attest to a new age in medicine. The ENCODE project, in which Yale faculty played a key role, has advanced knowledge of those regions of the genome derisively called junk DNA, even though it's been known for years that they are vibrant and active areas of the genome. And the School of Medicine and Yale-New Haven Hospital have begun to implement an electronic medical record (EMR) format that is expected to revolutionize not just the practice of medicine but medical research as well.

Finally, in our student pages we explore a phenomenon we've been observing for a few years now—more and more students are opting to stay on for a fifth year at the School of Medicine. The reasons why may surprise you.

John Curtis
Editor

SECOND OPINION BY SIDNEY HARRIS



"I'M PRESCRIBING A MUCH MORE EFFECTIVE TYPE OF LEECH."

yale medicine

*Alumni Bulletin of the
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MICHAEL MARSLAND

Levin's legacy endures at the School of Medicine

President Richard C. Levin steps down after 20 years. Provost Peter Salovey will take the helm in June.

When Richard C. Levin took office as president of Yale in 1993, the university faced several challenges. Among them were an infrastructure desperately in need of repairs and renovations, high crime rates in New Haven that made it hard to recruit students and faculty, and talk of eliminating entire departments because of a budget crisis. While these pressing issues needed to be addressed, Levin also held a vision of Yale as a truly global

institution. And preeminence in science and medicine was essential to reaching that goal.

"We are among the handful of centers in the nation and the world that have assumed leadership in the basic biological sciences, the understanding of human health, the treatment of human disease, and the education of scientists and medical practitioners," Levin said in a 1996 speech. "As our fourth century begins, we must aspire to continuing leadership in the life sciences, which hold so much promise for human health and our nation's future prosperity."

In August 2012 Levin announced that after 20 years of leading the university, he would step down at the end of the current academic year. (In November, the Yale Corporation, in a unanimous vote, named Provost Peter Salovey, Ph.D. '86, to succeed him.) Levin noted in a message to the Yale community that the time is right for a change in leadership. The university, he said, is in a much stronger position than it was 20 years ago. Many institutional goals—the five-year Yale Tomorrow campaign; renovations of the residential colleges; managing the 2008 financial crisis; funding for the new School of Management campus; achieving critical mass on the West Campus; and launching Yale-NUS College in Singapore—have been reached or are close to realization.

At the School of Medicine Levin has left a legacy of investments in new research buildings as well as recruitments of leading scientists and physicians that have strengthened its clinical, educational, and research missions. In January 2000 Yale announced an unprecedented \$500 million investment in science and engineering. Less than a month later Levin announced an additional \$500 million for the School of Medicine over the coming decade.

"He had a very clear vision that science was critical to the future of Yale University," said Dean Robert J. Alpern, M.D., Ensign Professor of

et cetera ...

OPPOSITE Richard Levin (right) announced in August that he would step down after 20 years as president of Yale. Peter Salovey (left) was named to succeed him.

Medicine, who came to Yale in 2004. “Rick felt that medicine was already strong and that with the right investments it could become really strong. He was committed to having a great medical school and was very good at tying his decisions to that vision.”

Those investments created the infrastructure for modern biomedical science—new laboratories, core technology facilities, and high-tech teaching centers. The opening of two new buildings—the 457,000-square-foot Anlyan Center for Medical Research and Education and the 120,000-square-foot Amistad Street Building—freed older spaces for new uses, and permitted reorganization and renovation across the medical campus. New space led to an increase in medical school faculty, which in turn led to an increase in the school’s annual grant funding over the same time period, from about \$140 million to about \$540 million. Support of medical research has had a spinoff effect, nurturing a biotech industry in New Haven, which is now home to several companies formed on the basis of discoveries made in Yale labs.

In another advance for scientific and medical research, the university in 2007 purchased the former Bayer Healthcare North American pharmaceutical headquarters, now known as West Campus, adding more than 1.5 million square feet of building space to the university, including 450,000 square feet of laboratory space. Rather than use these facilities as spillover space for existing programs, Levin believed that the campus should provide opportunities for innovative biomedical and clinical science programs

that cross disciplinary boundaries. “I remember him saying that this should not be just more of the same,” Alpern said. “It should allow us to do something different and distinctive.” The West Campus is now home to new biomedical research centers as well as core technology facilities. “This has transformative potential, frankly, only some of which we can envision today,” Levin reflected when planning began for the West Campus. “We’ve given our successors an opportunity to dream in ways we can’t imagine today.”

In selecting Salovey to succeed Levin, members of the Yale Corporation cited his leadership skills and his knowledge of Yale, as well as his own scholarly accomplishments. Salovey, the Chris Argyris Professor of Psychology, has also served as chair of psychology, dean of Yale College, and dean of the Graduate School of Arts and Sciences; and has longstanding links to the schools of medicine and public health. In 1997 he became the first deputy director of the Center for Interdisciplinary Research on AIDS. He is well known for his research on the concept of emotional intelligence and studies of effective health communications.

“While Rick Levin will be missed greatly, Peter Salovey will be an excellent successor,” Alpern said. “I am confident that he will continue Rick’s commitment to science and medicine, while defining his own specific agenda and implementation plan.”

—*Marc Wortman and John Curtis*

GENDER BIAS PERSISTS

“Whenever I give a talk that mentions past findings of implicit gender bias in hiring, inevitably a scientist will say, ‘That can’t happen in our labs because we are trained to be objective,’” said Jo Handelsman, PH.D., the Frederick Phineas Rose Professor of Molecular, Cellular and Developmental Biology, and a Howard Hughes Medical Institute professor.

She tested that belief among colleagues at several research-intensive institutions who received the same application—ostensibly from an undergraduate applying for a job as lab manager—which was randomly assigned a male or female name. Scientists of either sex were more likely to hire the man than the woman, more willing to mentor him, and willing to pay him \$4,000 more. Handelsman published her findings on Sept. 24 in the *Proceedings of the National Academy of Sciences*.

Regarding her colleagues’ insistence that gender bias couldn’t happen in their labs, said Handelsman, “I had hoped that they were right.”

—*John Curtis*

LOTTERY TICKETS MAY POSE RISK

Youngsters who receive instant lottery tickets as gifts tend to start gambling earlier in life, perhaps putting them at risk for gambling disorders as adults, Yale researchers reported on Sept. 19 in the journal *Adolescent Health*.

A survey of about 2,000 Connecticut high school students found that children and adolescents who received scratch lottery tickets tend to have more permissive attitudes about gambling than those who did not receive such gifts. Researchers also reported an association between the age of gambling onset and the severity of problem gambling among those who received lottery tickets.

“Our research suggests that family members and friends should consider the possible negative impact of giving children or adolescents lottery tickets as gifts,” said Marc Potenza, PH.D.’93, M.D. ’94, HS ’98, FW ’99, professor of psychiatry, neurobiology and child study, and senior author of the research.

—*J.C.*

Hospital of Saint Raphael becomes a new campus of Yale-New Haven Hospital

About three years ago Marna Borgstrom, M.P.H. '79, president and CEO of Yale-New Haven Hospital (YNHH), and Christopher O'Connor, then the newly appointed president of the Hospital of Saint Raphael (HSR), began meeting over lunch to explore synergies that would allow the two hospitals to provide the best possible health care to the New Haven community. Both executives saw advantages in collaboration over competition. "We talked about ways we could work together," Borgstrom said.

Both CEOs, however, had other concerns on their minds. More than 90 percent of YNHH's beds were occupied, straining its capacity. The only place to build was upward, but a new patient tower would cost about \$650 million and take up to seven years to construct. Six blocks away, HSR was spending more than it was taking in—about 70 percent of its patients were on Medicaid or Medicare. Over time the two CEOs came to recognize that a partnership made sense for both institutions.

On September 11, O'Connor and Borgstrom, surrounded by staff from both hospitals, elected officials, New Haven's mayor, and representatives of the Sisters of Charity of St. Elizabeth, signed a document that made official YNHH's purchase of Saint Raphael's. At one minute after midnight the next day, HSR became the Saint Raphael Campus (SRC) of YNHH, which absorbed 3,400 of its employees.

The solution for HSR, said O'Connor, "was to partner with a

hospital that was already well known to our staff and physicians. It will drive efficiency and effective use of medical resources. It will address financial challenges we face while providing an innovative opportunity to invest in services right here in New Haven."

"We believe that as one unified hospital, we'll be able to enhance access to high-quality health care resources in a more cost-effective manner," Borgstrom said. "This integration will be critical to meeting the extraordinary health care challenges that lie ahead."

To judge by those present at the ceremony in a YNHH auditorium, the acquisition is a win-win for all. Under the terms of the agreement YNHH paid \$160 million for HSR. With only 300 of HSR's 511 beds occupied, YNHH has more room for patients. Most jobs at HSR will be preserved—though about 200 layoffs, mostly in administration, are expected. The agreement maintains HSR's Catholic values and traditions, which have been in place since it was founded by the Sisters of Charity in 1907. The transaction turned YNHH into one of the largest hospitals in the country, with 1,519 beds.

"As we conducted our deliberations as a board, it became clear that the integration of these two hospitals would provide a unique chance to reshape the delivery of health care in the state," said Joseph Crespo, chair of the board of YNHH. "Not only that, with the wave of health care reform that is sweeping our nation, we felt that this could serve as a model for the nation as well."

Mayor John DeStefano Jr. cited the importance of the two hospitals and the

School of Medicine to the city—New Haven has 11,600 jobs in medicine as well as 42 bioscience companies. "The combination of medical school and clinical practice of the hospital is essential to not just the city's economic well-being, but to the state," he said.

But for the staffs of both hospitals, the heavy lifting was just beginning as they integrated two hospitals with different ways of doing things. Decisions to be made ranged from the mundane—where to find bed linens and cafeteria trays—to such complex topics as new reporting relationships for medical staff, media policies for communications officers, and seniority and job descriptions. Also on the agenda is expanding the planned implementation of an electronic medical records system at YNHH to cover HSR. In the runup to the acquisition more than 1,300 policies and procedures were standardized.

At the time of the signing it was not yet clear which departments would be headquartered in which hospital, though emergency departments and intensive care units will remain open in both. A command center was set up at SRC to answer questions that might arise. The center also ensured that such essential services as patient care, admissions, medical records, purchasing and supplies, support services, information technology and telephones, and payroll and billing will continue without interruption.

Aiding in the transition, noted O'Connor, who became executive vice president and COO of the Yale New Haven Health System, are strong ties between the two hospitals. About 80 percent of HSR's physicians were

et cetera . . .

SMOKING BANS AND ALCOHOL

Banning smoking in bars and restaurants can cut down not only on tobacco-related illnesses but also on alcohol abuse, according to a study by Yale researchers.

Using data from a national alcohol survey, the Yale researchers compared remission rates of individuals with alcohol use disorder (AUD) in states that enacted smoking bans in establishments that serve alcohol with rates in states without such bans. In the states where smoking bans were in effect, there was an 11 percent increase in remission of AUD. States with public drinking bans also had a lower rate of new cases of AUD—7 percent versus 11 percent in states without bans. These changes seemed to be most pronounced in men and young people as well as in smokers.

"We wanted to see if separating smoking and drinking in public drinking venues changed drinking behavior," said Sherry McKee, Ph.D., associate professor of psychiatry and senior author of the study published in September in the journal *Drug and Alcohol Dependence*. "It does."

—John Curtis

ENZYMES AT WORK

Yale scientists have captured views of an enzyme's working parts that show the operation of its chemical mechanisms.

"We caught the intron in action," said principal investigator Anna Pyle, Ph.D., the William Edward Gilbert Professor of Molecular, Cellular, and Developmental Biology and professor of chemistry. Pyle's lab reported in the October 26 issue of the journal *Cell* on 14 crystal structures that appear at different stages of catalysis in a group II intron—a ribozyme involved in RNA splicing.

One of RNA's major functions is to copy genetic information so that ribosomes, the cellular protein factories, can decode it. An early step in that process is splicing—breaking RNA apart and recombining its pieces to produce a protein.

"Whenever splicing gets messed up, you'll find a disease that results," said Pyle, a Howard Hughes Medical Institute investigator. "Until now we haven't really understood the splicing reaction chemically."

—J.C.



already accredited at YNHH. The chief of staff and senior vice president for medical affairs at YNHH, Peter N. Herbert, M.D. '67, had previously served as chair of the department of medicine at HSR. Alan Kliger, M.D., a senior vice president at Saint Raphael, has also worked at Yale, where he served on the clinical faculty and is now a vice president and chief quality officer of the Yale New Haven Health System.

—John Curtis

Marna Borgstrom and Christopher O'Connor signed the agreement that sealed Yale-New Haven Hospital's purchase of the Hospital of Saint Raphael.

Return to poetry

Cardiologist Barry Zaret composes poems about a life in medicine, dusk in the Berkshires, and his late wife.

Every time he updates *Clinical Nuclear Cardiology*, the textbook he co-wrote, Barry L. Zaret, M.D., adds new material. But when he sits down to revise a poem, he does the opposite.

"You start big and you get smaller and smaller," says Zaret, the Robert W. Berliner Professor Emeritus of Medicine, who was Yale's long-time chief of cardiovascular medicine until 2004. "It has to have the right cadence, and there's got to be an economy of words. It's amazing, the time you can spend on simple changes." He reworks the poem over time. "You need to let the poem mature."

Zaret's first book of poetry, *Journeys*, touches on themes from the writer's Jewish heritage and

a life in medicine, and on the beauty of Massachusetts' Berkshires. Nine poems in a section titled "In the Land of Cancer" tell the story of his wife Myrna's illness and death from cancer in 2010, and of the grief and renewal that followed. Among Zaret's favorite poems in the collection are "My Father's Kosher Butcher Shop"; a description of dusk called "Berkshire Light"; and "Paper Plate Pesach," about his first Passover without Myrna after 47 years of marriage.

Until Zaret returned to poetry eight years ago, he had not written a poem since contributing to his Far Rockaway High School yearbook in 1958. In recent years, he's been setting his alarm for 4:30 a.m. so he can write before heading down to the School of Medicine. Weekends, he paints at his house in the Berkshires. His oil painting, "The Road from St. Remy to Arles," appears on the cover of *Journeys*.

—Cathy Shufro

JOURNEYS



Barry L. Zaret

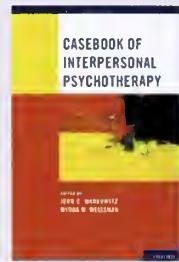
THE GREAT
MANCHURIAN
PLAQUE OF
1910–1911

The Geopolitics of an Epidemic Disease
WILLIAM C. SUMMERS



CASEBOOK OF
INTERPERSONAL
PSYCHOTHERAPY

Edited by JOHN C. MARKOWITZ AND MYRNA M. WEISSMAN



The Great Manchurian Plague of 1910–1911: The Geopolitics of an Epidemic Disease

by William C. Summers, M.D., Ph.D., professor of therapeutic radiology, of history of medicine and science, and of molecular biophysics and biochemistry (Yale University Press) In this case study, the author first sets the scene in Manchuria, then describes the epidemic that began in 1910 when plague was transmitted from marmots to humans and killed as many as 60,000 people in less than a year. Summers examines the actions and interactions of the multinational doctors, the politicians from three countries, and the ordinary citizens who confronted the outbreak.

Casebook of Interpersonal Psychotherapy

edited by John C. Markowitz, M.D., and Myrna M. Weissman, Ph.D. '74 (Oxford University Press) This book addresses the use of interpersonal psychotherapy (IPT), a modality that has been developed to build social skills as well as relieve psychiatric symptoms on the understanding that interpersonal problems contribute to many mental disorders. The authors provide detailed case studies that illustrate how psychotherapists use IPT to treat patients with a range of conditions and complications that include mood, anxiety, eating, and personality disorders. The book examines different contexts for practicing IPT, including group therapy, inpatient settings, and telephone therapy.

Becoming a Consummate Clinician: What Every Student, House Officer and Hospital Practitioner Needs to Know

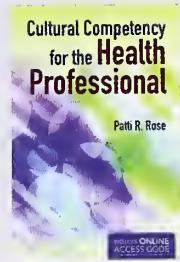
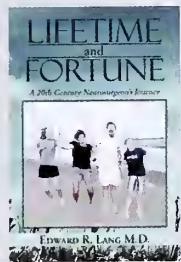
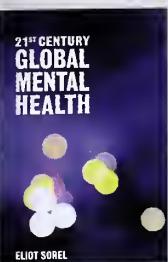
edited by Ary L. Goldberger, M.D. '74, HS '77, and Zachary D. Goldberger, M.D. '04 (Wiley-Blackwell) In an era in which the learning curve in medicine is increasingly steep, this text features real-world examples in hospital-based medicine to help both practitioners and students improve their clinical skills and learn to communicate more effectively as they assess, integrate, and present clinical information. The authors offer strategies for attending physicians to help their trainees develop critical thinking skills. The book is available in an online edition as well as in print.

A Diffident Doctor

by Hugh L. Moffet, M.D. '57 (Two Harbors Press) The author's personal story presents a snapshot of history, culture, politics, and major events during the time span from his early childhood in Illinois in the 1930s to medical school at Yale, a pediatrics practice in Wisconsin, and retirement in Nevada beginning in 1998. The author's presentation of American medical practice over the past 50-plus years reveals changes in diagnostic methods and medications—as well as in infectious diseases themselves.

Biometrical Child Development: Perspectives on Psychology and Parenting

by Frank John Ninivaggi, M.D., FW '77, assistant clinical professor in the Child Study Center and of psychiatry (Rowman & Littlefield Publishers) The biometrical perspective provides



a holistic view of child development that incorporates biological and emotional dimensions. The book provides parents with a basic understanding of normal psychological development based on current findings from psychology, psychiatry, and neuroscience. The author maintains that positive parenting encompasses diverse styles arising from differences among both children and caregivers. Parents, grandparents, and other caregivers can use this guide to achieve a working understanding of child development at each stage in the young person's life.

21st Century Global Mental Health
by Eliot Sorel, M.D., FW '75
(Jones & Bartlett Learning) This textbook examines the subject of global mental health, its integration with public health and primary care, the progress to date, and the challenges that remain. The book addresses the increasing prevalence of mental disorders, the fragmentation of health systems, the pervasive stigma of mental illness, and the persistence of worldwide discrimination against the mentally ill.

Lifetime and Fortune: A 20th Century Neurosurgeon's Journey
by Edward R. Lang, M.D. '60
(Xlibris Corporation) Lang is a retired neurosurgeon born in the Hyde Park neighborhood of Chicago's South Side. In this autobiography, the author describes his childhood, college years, his medical education and residency, and his later career. He also gives an account of extensive travels to the British Isles, Europe, Scandinavia, and China.

Cultural Competency for the Health Professional

by Patti R. Rose, M.P.H. '85
(Jones & Bartlett Learning) This text underlines the importance of cultural competency for allied health professionals, and describes the process of assessment, training, and evaluation. It provides students in the health professions with important information about cultural competency as well as practical insights in applying this knowledge in day-to-day work with patients from different cultural backgrounds.

Smith's Patient-Centered Interviewing: An Evidence-Based Method, 3rd ed.

by Auguste H. Fortin, M.D., associate professor of medicine; Francesca C. Dwamena, M.D.; Richard M. Frankel, Ph.D.; and Robert C. Smith, M.D. (McGraw-Hill Professional) This text has been updated and expanded by a multidisciplinary team of medical experts, and presents a step-by-step method for mastering every aspect of the medical interview. The book discusses ways to obtain accurate biomedical facts from patients as well as critical personal, social, and emotional information.

The descriptions above are based on information from the publishers.

SEND NOTICES OF NEW BOOKS TO
Cheryl Violante, *Yale Medicine*,
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New Haven, CT 06510, or via
e-mail to cheryl.violante@yale.edu

Harold W. Jaffe

The mystery of HIV

Only five men were listed in the first official recognition of what would become a worldwide pandemic: five gay men from Los Angeles with a rare pneumonia who were described in the Centers for Disease Control and Prevention's (CDC) *Morbidity and Mortality Weekly Report* of June 5, 1981. The first cause suspected was "poppers," nitrite inhalants popular with gay men.

Harold W. Jaffe, M.D., told the story of solving the "medical mystery" that was HIV at the Beaumont Medical Club Lecture on October 26. The associate director of science at the CDC described working as an epidemic intelligence officer on a disorder that did not yet have a name.

Through detective work that included tracing webs of sexual partners, Jaffe and his colleagues recognized that the illness was spread through sexual contact and contaminated blood products.

"Sometimes we think of public health as kind of mechanical and dry, but it isn't," said Jaffe, who also screened depictions of himself in *And the Band Played On*, a 1993 movie about the AIDS crisis. The story of AIDS, Jaffe said, shows the "power of the epidemiological method to understand and control a disease even before we knew the cause."

—Cathy Shufro

Jack Hitt

Evidence in our language

Evidence of individual identity almost as incriminating as a fingerprint can be gleaned from how we use language.

"A lot of us litter our writings, our texts, our e-mails, and our letters with a little bit of ourselves," said author and storyteller Jack Hitt. As forensic linguistics has become more accepted in American courtrooms, he said, testimony from linguists has sealed both convictions and acquittals. Hitt, who gave the James Kenney Lecture in September for the Program for Humanities in Medicine, wrote an article about the topic for *The New Yorker* in July.

In one case, although the physical evidence was not overwhelming, a jury found a man guilty of killing his family based largely on the linguistic constructions in anonymous threatening e-mails sent before the murders. Consistently misplaced apostrophes and fused spellings ("goodtime") were identical to material that the suspect was known to have written.

Forensic linguists look "for any kind of unconscious pattern," Hitt said. They also listen to voice recordings for "the beats in that sentence and the pause in that comma."

Experts have delivered a split verdict. "Half the body of forensic linguists doesn't think that forensic linguistics should be involved in criminal cases," Hitt said.

—John Dillon

The Civil War Wounded in Photographs

By Natalie Villacorta



In this 1864 photo of a ward at Harewood Army Hospital in Washington, D.C., wounded soldiers lie under mosquito nets over their beds. Reed Bontecou, M.D., the hospital's head surgeon, commissioned photographs of his patients to document surgical practices. Ninety-eight of those photographs found their way to the School of Medicine's Medical/Historical Library.



MEDICAL/HISTORICAL LIBRARY

Seated in profile, the young men pose as they would for family portraits. On closer inspection of the oval gold-lined frames, the serene faces are scarred, bald spots divided by deep canyon-like cuts, shoulders swollen around bullet craters. These are the “after” photos, taken after the men had left their homes to fight for the Union or the Confederacy, and after they were wounded, carrying the scars of the American Civil War for the rest of their lives.

“This is one moment in this person’s life,” said Heidi Knoblauch, a doctoral candidate in the History of Medicine program, who is examining Yale’s collection of 98 photographs taken during the Civil War at Harewood Army Hospital in Washington, D.C. “To piece together what happens after this moment, how people live with their wounds afterwards, how that patient experience either carries with them or doesn’t carry with them, has been a motivating factor for me.”

Knoblauch’s photo analysis will comprise one chapter in her dissertation on the use of photography in American medical practice from 1839 to the eve of World War II.

Locked away in the stacks of the Cushing/Whitney Medical Library, these Civil War photographs are one of four collections of enlarged photographs commissioned by the head surgeon at Harewood, Reed Bontecou, M.D., a pioneer in the art of clinical photography. Yale’s collection is now used as a teaching tool

in several classes, including “Photo Memory in the U.S.,” taught by Laura Wexler, PH.D., professor of American Studies and Women’s, Gender, and Sexuality Studies.

Knoblauch noticed that most of the scholarship on the photos focuses on Bontecou and the practice of surgery rather than on the patients he photographed. “By focusing on him, we’ve kind of lost the patients’ narratives,” Knoblauch said. Investigating the lives of the men in Bontecou’s photos is a way for Knoblauch to enter into that patient experience, she said. “Being wounded gave them a record; it attached a visual image to their name, something that a lot of Civil War soldiers did not get,” she said.

On the backs of the photos are short biographies of the soldiers—both Union and Confederate—containing personal and medical information. Knoblauch also searched census data and military and pension records; she will use the individual stories to tell the larger story of what it was like to be a wounded Civil War veteran.

Robert A. Butcher, a 21-year-old laborer from Philadelphia who served in an infantry company, suffered two saber cuts to his skull during a battle at Burke’s Station, Va., in April 1865. He complained of severe headache and sensitivity to light and noise, but left Harewood at his own request and lived for 68 more years, moving among veterans’ homes across the country from Milwaukee to the Chesapeake Bay.

Aaron Detweiler, an 18-year-old corporal in a Pennsylvania infantry company, was shot in his upper right arm during the battle of Hatcher’s Run, Va., in March 1865. He went on to become a doctor and later drowned in a place called Devil’s Hole.

“It’s a different story because it shows not only the tragedies of the war, but also the resilience. A lot of these people live until 1910, 1930—and just thinking about how they go on has been interesting for me,” Knoblauch said.

The photographs will be part of an exhibit curated by Knoblauch titled “Portraits of Wounded Bodies.” They will be on display in the rotunda of the Medical Library from January through April 2013. The cases in the foyer of Sterling Hall will provide background on medicine during the Civil War, including maps of and information about Harewood Hospital as well as a biography of Bontecou.

Natalie Villacorta is a student at Brown University and was *Yale Medicine’s* 2012 writing intern.

ABOVE Although the photographs documented surgical practices, they also included information about the patients. From left: Judson Spofford, a private in the 10th Vermont Regiment, was almost killed by a Minié ball at Fort Stedman, near Petersburg, Va.; Robert A. Butcher, 21, a private in the 82nd Pennsylvania, was wounded in April 1865 when Confederate cavalrymen struck his head with sabers; Cpl. Aaron Detweiler served in the 198th Pennsylvania Regiment, Co. G, and was wounded in the arm in battle in Virginia in 1865; far right, an unidentified soldier.

Junk no more

Yale scientists played a leading role in an international effort to map the 99 percent of the human genome that doesn't produce proteins—perhaps ending the notion that those regions are “junk.”

By Colleen Shaddox



R.I.P., junk DNA: not the DNA as such, but the moniker that has described it in a misleading fashion for years. Scientists have long known that vast swatches of the human genome don't produce proteins. They have also known that these sections are nonetheless active. How much of the genome produces proteins was not known until the first draft of the Human Genome Project, released in 2000, tallied the coding regions of the genome. Only about 1 percent—roughly 21,000 genes—codes for proteins. And the other 99 percent?

The National Human Genome Research Institute (NHGRI) began a follow-up to the Human Genome Project in 2003. With a budget of \$288 million, the Encyclopedia of DNA Elements (ENCODE) would map that 99 percent and catalogue its functional elements for a better understanding of the genome and its role in human biology and disease. ENCODE enlisted 440 researchers at 32 institutions in the United States, the United Kingdom, Spain, Singapore, and Japan, who communicated via wikis, Google docs, and two face-to-face meetings each year. The researchers began with a pilot project that would study just 1 percent of the genome while gauging research methods and technologies. Their findings, published in *Nature* and *Genome Research* in 2007, showed that the project could identify and characterize functional elements in the genome. In the next phase, the consortium went beyond the initial 1 percent and covered the whole genome by studying 147 cell types and performing more than 1,600 experiments.

In September the findings from those experiments were published in such journals as *Nature*, *Genome Research*, and *Genome Biology*. This research announced all ENCODE, “gives the first holistic view of how the human genome actually does its job.”

The consortium found biological activity in 80 percent of the genome and identified about 4 million sites that play a role in regulating genes. Some noncoding sections, as had long been known, regulate genes. Some noncoding regions bind regulatory proteins, while others code for strands of RNA that regulate gene expression. Yale scientists, who played a key role in this project, also found “fossils,” genes that date to our nonhuman ancestors and may still have a function. Mark B. Gerstein, PH.D., the Albert L. Williams Professor of Biomedical Informatics and professor of molecular biophysics and biochemistry, and computer science, led a team that

unraveled the network of connections between coding and noncoding sections of the genome.

Arguably the project's greatest achievement is the repository of new information that will give scientists a stronger grasp of human biology and disease, and pave the way for novel medical treatments. Once verified for accuracy, the data sets generated by the project are posted on the Internet, available to anyone. Even before the project's September announcement, more than 150 scientists not connected to ENCODE had used its data in their research.

“We've come a long way,” said Ewan Birney, PH.D., of the European Bioinformatics Institute (EBI) in the United Kingdom, lead analysis coordinator for ENCODE. “By carefully piecing together a simply staggering variety of data, we've shown that the human genome is simply alive with switches, turning our genes on and off and controlling when and where proteins are produced. ENCODE has taken our knowledge of the genome to the next level, and all of that knowledge is being shared openly.”

Big data, big questions

The day in September that the news embargo on the ENCODE project's findings was lifted, Gerstein saw an article about the project in *The New York Times* on his smartphone. There was a problem. A graphic hadn't been reproduced accurately. “I was just so panicked,” he recalled. “I was literally walking around Sterling Hall of Medicine between meetings talking with *The Times* on the phone.” He finally reached a graphics editor who fixed it.

An academic whose scholarly and personal interests focus on information and how we make sense of it, Gerstein had run up against the juggernaut of the 24-hour news cycle. But in the end, he helped *The New York Times* get it right, just as he'd played a role in helping the international consortium of ENCODE scientists interpret the vast expanse of data that they uncovered. The concept of “big data,” an amount of information so large that it challenges efforts to store and use it, is key to ENCODE and to Gerstein's work generally. “It's really a very transformative idea in terms of how people approach experiments and how people think about analyzing things,” he said. He likened a rich data resource to a great piece of literature, “something that's kind of transcendent and speaks to many different people.” It can inspire and answer many questions. “I do think that

particularly for genomic data sets,” he said, “the value of the data set goes beyond the initial question.”

Given the new availability of incredibly large data sets, a scientific supergroup with high levels of collegiality and collaboration was essential to the success of ENCODE. Having one group carry out the project allowed for a uniformity of method and reporting that was critical, said Michael Pazin, PH.D., program director in functional genomics at NHGRI. Imagine the confusion caused by a map where thick blue lines sometimes represent interstate highways and other times rivers. But there is ample room for small projects to emerge based on the availability of the new resource, added Elise Feingold, PH.D. ’86, program director in genome analysis at NHGRI. “I don’t think (consortia are) ever going to substitute for the individual researcher and these small collaborations,” she said.

Gerstein took to the collaborative process, according to Birney. “Mark likes to find a scenario where everyone gets along without compromising the science. This is not always as easy as it sounds, and takes some effort talking to people. Like all of us, Mark has some characteristic phrases, and I would always know that Mark didn’t quite agree on something when he would start, ‘Wouldn’t you say, Ewan, that ...’, and then he’d be into some point,” Birney said.

New technology paves the way

ENCODE would have been unthinkable without the technology and methodology to gather, store, and analyze enormous data sets. When Gerstein began his career things were different. He’d majored in physics and wanted to pursue a science that was driven by advances in computer technology. But there was no clear pathway to do that. He completed his doctorate at Cambridge, which is now home to the EBI. “There was no EBI,” recalled Gerstein. “There was no program in bioinformatics. I did a program in chemistry.” He wondered whether he’d stay in academia because most universities did not have even a single bioinformatics position.

In 1996, however, Donald Engelman, PH.D., the Eugene Higgins Professor of Molecular Biophysics and Biochemistry, saw the need for computational expertise at Yale and recruited Gerstein. “I and others in the department were concerned about computation and its role in research,” remembered Engelman, who was not involved in ENCODE. “There would be an enormous explosion of information to deal with as genetic

information became available and more structural information became available. Someone who can use those enormous databases is key.”

In those days, though, the tools for uncovering those data were still being discovered. When Valerie Reinke, PH.D., associate professor of genetics, was in college, she’d often draw diagrams of cells on cocktail napkins to illustrate points to her friends who were not science majors. “It always amazes me that there are people who don’t want to know how their bodies work,” she said. Reinke was part of the modENCODE project, which focused on functional element identification similar to ENCODE, only in such model organisms as the fruit fly *Drosophila melanogaster* and the roundworm *Caenorhabditis elegans*. Reinke specializes in roundworm, which shares many genes with humans. About a fifth of the worm’s genome codes for proteins, making it easy to identify noncoding functional elements. The tools for discovering the fine details of what was happening in those sketches she drew in college were still evolving when she was a student. By 2000, when she joined the Yale faculty, microarray technology, which allows scientists to analyze expression of multiple genes in a single experiment, was brand-new. As with personal computing, DNA sequencing technology has rapidly grown more powerful, faster, and cheaper.

In 2007, as the ENCODE pilot project was ending and the next phase was getting started, next-generation sequencing technology became available. “That was really a remarkable confluence of events that we were able to take advantage of and was really a game changer for the project,” remembered Feingold.

The evolution of the technology is making it practical to look at genetics on an individual level, said Reinke, where information could be used to formulate treatments tailored to a particular patient. “We haven’t even begun to scratch the surface,” she said. “There are so many questions.”

One thing is clear. ENCODE will have profound implications for personal genomics. Each of us gets a double set of genes, with one copy, or allele, coming from each parent. Being able to determine allele-specific expression “brought home the idea of what you might call a personal annotation,” Gerstein said. “We think that this personal annotation is the next phase for genomics.”

This personal annotation, notes Gerstein, can raise ethical issues. Would you want an employer or health

insurer to know about your susceptibility to a degenerative illness? These kinds of questions don't stop at the molecular level, when Foursquare lets the world know in which Starbucks you're enjoying a coffee and a friend can share on Facebook a picture from the office holiday party that you'd rather never saw the light of day. "I do think a big aspect of information technology, both big data and computing, is this erosion of privacy," said Gerstein.

The myth of junk DNA

Some early press coverage credited ENCODE with discovering that so-called junk DNA has a function, but that was old news. The term had been floating around since the 1990s and suggested that the bulk of noncoding DNA serves no purpose; however, articles in scholarly journals had reported for decades that DNA in these "junk" regions does play a regulatory role. In a 2007 issue of *Genome Research*, Gerstein had suggested that the ENCODE project might prompt a new definition of what a gene is, based on "the discrepancy between our previous protein-centric view of the gene and one that is revealed by the extensive transcriptional activity of the genome." Researchers had known for some time that the noncoding regions are alive with activity. ENCODE demonstrated just how much action there is and defined what is happening in 80 percent of the genome. That is not to say that 80 percent was found to have a regulatory function, only that some biochemical activity is going on. The space between genes was also found to contain sites where DNA transcription into RNA begins and areas that encode RNA transcripts that might have regulatory roles even though they are not translated into proteins.

But helping people grasp the massive import of ENCODE proved a challenge. "People don't think that creating a resource is a sexy endeavor," said Feingold.

"It's so easy to either overpromise or undersell," agreed Pazin. On the one hand, he did not want to make claims that ENCODE would quickly lead to cures for diseases like cancer. On the other, he didn't want the public to ignore the discovery because it was too technical to understand. That's why the "useful shorthand" of junk DNA so often came up in coverage, said Feingold.

Hopefully, ENCODE will help put an end to the notion of junk DNA. The project not only assigned general classes of functions to areas of the genome but also showed the

complexity of how those areas interact. The project revealed the genome's organizational hierarchy, with top-level regulators wielding vast influence while "middle managers" often have to collaborate to regulate genes.

There was no "Eureka!" moment, said Gerstein, who called the findings "the opposite of a discovery." Instead, there were years of gathering and interrogating data to create a map of the vast majority of the genome. As many researchers have found, these noncoding regions are alive with regulatory activity that plays a critical role in human disease, though some of the functioning that was documented did not have such obvious applications.

His team, Gerstein said, took a different path from those of others involved in the project.

"Most of the project is more oriented on annotating elements," he said. "Our unique perspective was to make it a network."

If it were simply a genetic encyclopedia, ENCODE would catalogue its entries in isolation from one another. The *Abaco Islands* reside next to *abacus* in a conventional encyclopedia because that's how the words fall alphabetically—not because the topics identified by the words have any intrinsic relationship. Knowing how different parts of the genome work together is far more powerful than simply compiling a parts list.

Through computational analysis, Gerstein's lab broke apart the "hairball" of the regulatory networks to find working relationships. He developed statistical models that identified regulators located far away from the genes they influence. He found that the way the human genome is organized is not so different from the way humans organize themselves. Gerstein likens transcription factors that have considerable regulatory influence to top-level managers. As might be the case with their human analogues, these elite transcription factors tend to be conservative.

"What does *conservative* mean? *Conservative* means they're more preserved. There's less variation," said Gerstein. "It's sort of natural that in that kind of context, you don't want them to change as much."

The less influential transcription factors, which he terms "middle managers," are less conservative and more likely to work cooperatively than their peers. Often these middle managers will co-regulate a gene, easing the flow of information in what would otherwise be "a bottleneck."

Valerie Reinke studies the round-worm *C. elegans* and focuses on functional element identification in that organism. Advances in technology made the ENCODE project possible, she says, and are making it practical to look at genetics on an individual level. "We haven't even begun to scratch the surface," she says.

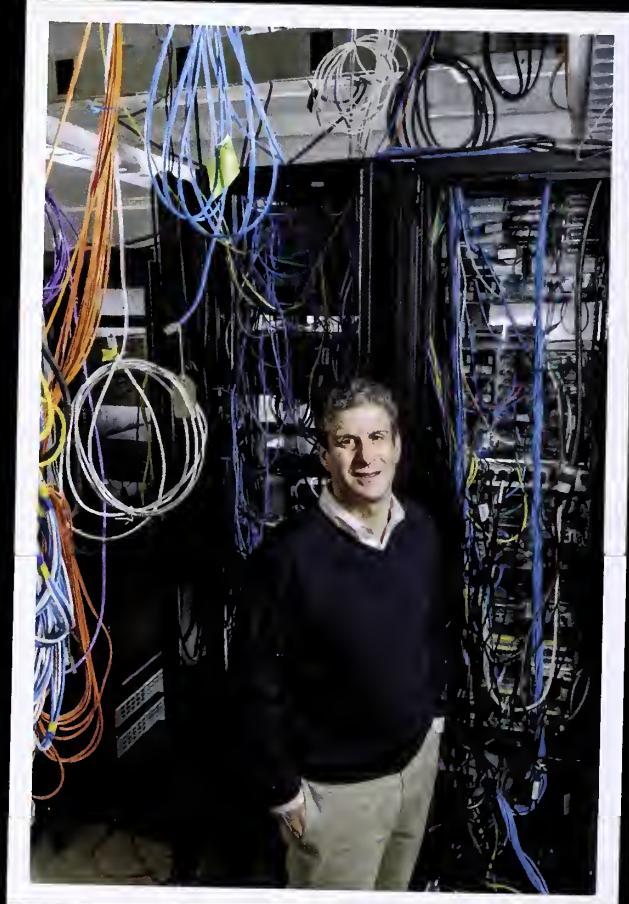


During his long career, geneticist Sherman Weissman has focused on genome-wide mapping of gene activity and chromosome structure in humans. "We have so much data, and a very large part of it hasn't been fully exploited," he says.



Mark Gerstein played a key role in an international project that elucidated many of the functions of the 99 percent of the human genome that does not code for proteins. Gerstein and his team unraveled the complex network of working relationships among genes and their regulators.

ROBERT URAK (3)



There is less interaction between the top-level transcription factors and the bottom-level, least influential transcription factors than one would expect to happen by chance. The human genome is not egalitarian.

Gerstein and colleagues at the Sanger Center, the University of California at Santa Cruz, and Cold Spring Harbor Laboratory on Long Island also found about 12,000 pseudogenes—fossil genes dating back to our non-human ancestors—which at first glance appear to be dead. But it turns out that some pseudogenes, while they no longer code for proteins, are quite animated. “They’re very much on the edge between living and dead,” said Gerstein.

In some people, these pseudogenes are turned into actual genes. “What’s going on here? Is this a gene that’s being born?” he asked. Pseudogenes open a window on the history of our species. Some of these fossil genes may still be players in the regulatory network.

The impact on medicine

What will ENCODE mean for human health, and how soon will this genomic encyclopedia inform treatment? There is no easy answer to that critical question, according to Sherman Weissman, M.D., Sterling Professor of Genetics.

“I grew up with the field,” said Weissman, whose research interests include genome-wide mapping of gene activity and chromosome structure in humans. Weissman contributed to ENCODE through collaborations with former Yale professor Michael Snyder, Ph.D., a leader in the field of functional genomics who is now at Stanford.

Knowing the molecular basis of a disease carries no guarantee that a cure is imminent. Linus Pauling, Ph.D., linked sickle cell disease to an abnormal protein in 1949, making it the first genetic disease for which the molecular basis was known. But, Weissman noted, there is still no cure for it. On the other hand, survival rates for chronic myelogenous leukemia are improving thanks to Gleevec, a drug based on oncogene study that received FDA approval in 2001. Weissman is optimistic that genetic information could lead to effective treatments for Alzheimer disease, which he terms “simpler than cancer.”

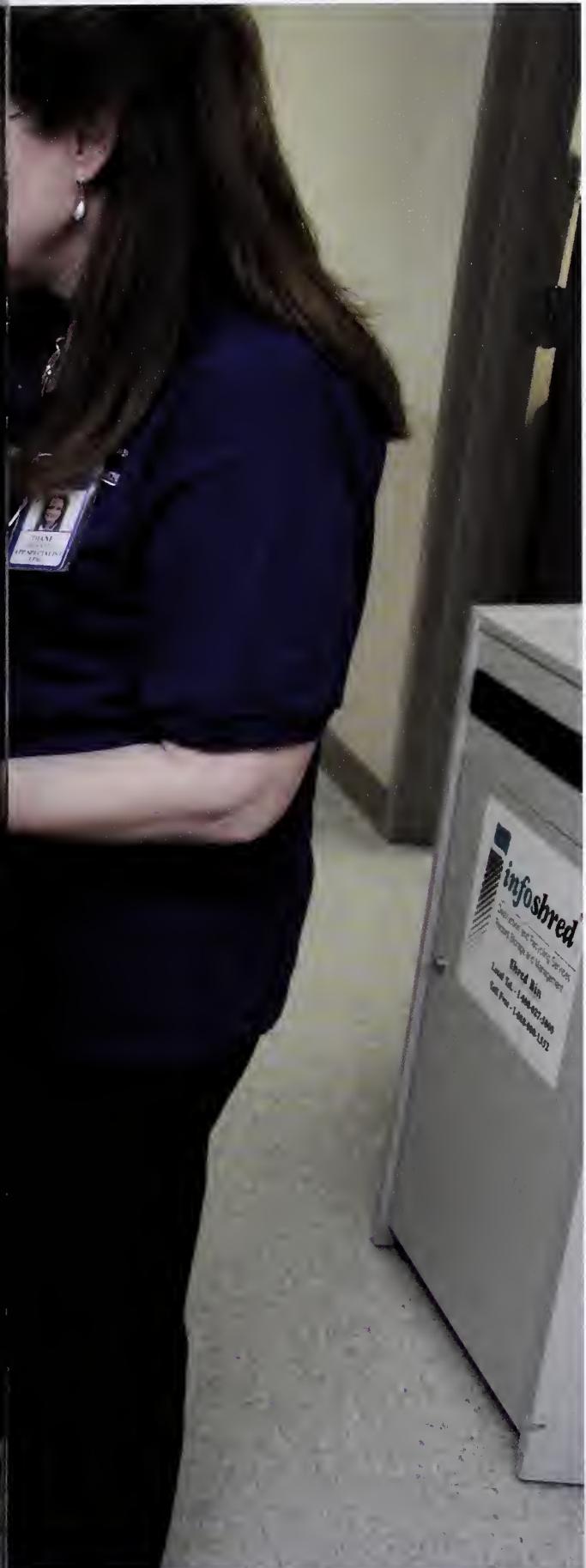
“We have so much data, and a very large part of it hasn’t been fully exploited,” he said. “We’re really bumping up against the ceiling in some practical ways.”

One of the project’s findings is that genetic changes linked to disease occur between genes in places where ENCODE has identified regulatory sites. It’s still not clear how variations in these areas contribute to disease. “Some people were surprised,” said Pazin, “that disease-linked genetic variants are not usually in protein-coding regions. We expect to find that many genetic changes causing a disorder are within regulatory regions, or switches, that affect how much protein is produced or when the protein is produced, rather than affecting the structure of the protein itself. The medical condition will occur because the gene is aberrantly turned on or turned off or abnormal amounts of the protein are made. Far from being junk DNA, this regulatory DNA clearly makes important contributions to human health and disease.”

“It’s important to realize that these findings won’t be taken forward by people like Mark or myself—rather we have to empower clinical researchers to use this data,” said Birney of the EBI. “I think ENCODE will have a big impact on medical research—in particular, genome-wide association studies have a really remarkable overlap with ENCODE data outside of protein-coding genes, and this is leading to all sorts of new hypotheses of how these diseases operate.” **YM**

—Colleen Shaddox is a freelance writer in Hamden, Conn.





Yale's Epic challenge

The health care system embraces electronic medical records and takes on a monumental task.

By Bruce Fellman

In early October, Gary E. Friedlaender, M.D., a specialist in musculoskeletal oncology who chairs the Department of Orthopaedics and Rehabilitation, was in Australia for meetings. Yet even 9,000 miles away from his office in New Haven, Friedlaender could stay in touch with his Yale Medical Group (YMG) practice and access information about his patients, including charts, notes, and X-rays.

"I was able to take out my laptop, receive information, generate orders, and talk to other providers about patient care," said Friedlaender, the Wayne O. Southwick Professor of Orthopaedics and Rehabilitation and professor of pathology. "Everything I needed was at my fingertips, and I can now connect wherever I happen to be."

The reason is Epic, a suite of electronic medical record (EMR) applications that is being implemented throughout the Yale New Haven Health System (YNHHS): at Greenwich, Bridgeport, and Yale-New Haven hospitals, as well as at YMG and the Northeast Medical Group (NEMG) community practices.

"Epic will transform the way we teach and practice medicine, both at Yale and around the country and the world," said Dean Robert J. Alpern, M.D., Ensign Professor of Medicine. "The Epic EMR will help us achieve a higher quality of care than ever before."

PREVIOUS PAGE On a rainy day in October 2011, Yale Internal Medicine Associates became the first practice in the Yale Medical Group to implement the Epic electronic medical records system. Marie Follo (seated), director of practice management, worked with staff on that first day.

The implementation process began in July 2010 when senior YNHHS, YMG, and School of Medicine administrators met with officials from Epic Systems, a Wisconsin-based software company, to sign a \$250 million contract that would transform health care delivery throughout the medical center. The EMR has been in use since October 2011, when Yale Internal Medicine Associates (YIMA) became the first YMG practice to start using the Epic ambulatory application. As of December, 388 providers in 76 practices were up and running on Epic with the numbers increasing each week. Yale-New Haven Hospital (YNHH) is scheduled to go live in early February and the entire rollout will be completed by September 2013.

Orthopaedics went live in March 2012, so Friedlaender can log onto Epic, even from “down under,” and have all the information he needs in one place. “We were drowning in paper,” he admits, “and all too often, we couldn’t find what we needed in a timely way. The Epic EMR corrects all that. It’s indispensable to improving the health care of the future.”

Enough people, from doctors to front-desk professionals, have incorporated the EMR into their workflows to corroborate these assessments. One key observer and present Epic user is David J. Leffell, M.D., deputy dean for clinical affairs, and the David P. Smith Professor of Dermatology and professor of surgery. When the contract was signed, Leffell was YMG’s CEO and played an instrumental role in the selection of Epic. His practice went live with the software in July—but as he and countless others have discovered, the process is easier said than done.

“The implementation was painful,” Leffell admitted. “There’s a steep learning curve. It’s not as customizable as we’d like, and it’s clear that our aspiration for a totally paperless world is not achievable. But even now—this early in the project—the pluses outweigh the minuses.”

Those advantages are considerable. There’s immediate secure electronic access to a patient’s medical history, including vital signs, medications, allergies, lab test results, and X-rays. Then there’s the ease and speed of the EMR system’s interactions with providers and patients alike, along with such “smart” features as warnings about drug interactions and information about treatment protocols. Pharmacies, thanks to an e-prescribing provision, no longer puzzle over a physician’s handwriting, and staffers don’t have to hunt down errant charts. Through MyChart, an

application that YNHHS included as part of its Epic implementation, patients can log into their own account to view their records and test results, interact with their providers, schedule appointments, and even pay bills. (More than 7,000 patients had signed up for MyChart by December.) And the wealth of data in the system will provide a mother lode of digital information to find more cost-effective ways to improve care.

As if these reasons aren’t compelling enough, there’s also a financial incentive. Within the American Reinvestment and Recovery Act, the \$789 billion federal stimulus legislation of 2009, was a provision called the Health Information Technology for Economic and Clinical Health (HITECH) Act. HITECH makes available up to \$20 billion to doctors and hospitals that institute EMRs and demonstrate what federal officials term “meaningful use” of the new technology. These benchmarks include using the EMR for a certain percentage of medication orders, entering demographic information, recording vital signs, noting smoking status, and maintaining an active medication allergy list, among other things. By meeting these requirements, physicians can become eligible to receive up to \$44,000 in Medicare money over five years. But to garner the full \$44,000 payment, each physician has to be using a certified EMR like Epic and hitting meaningful use targets by no later than this year.

An increasing number of YNHHS providers have done just that, and there is another powerful reason not to wait. Providers who choose to sit on the EMR sidelines or don’t achieve meaningful use by the end of 2015—and don’t qualify for a waiver—will be hit with a noncompliance penalty that amounts to 1 percent of Medicare payments in 2016, to rise to 5 percent in 2020. (There are Medicare penalties for hospitals, but no Medicaid penalties for either providers or hospitals.)

With the federal government encouraging and supporting the use of electronic medical records, it was time for all parts of YNHHS to act. YNHH, which was using separate EMR systems in the inpatient and outpatient clinic areas, was looking for a single integrated system. YMG, which still lived largely in the paper-records universe, wanted to go electronic.

After lengthy reviews and consideration of several candidate systems, a due-diligence committee chose the EMR software developed by Epic Systems, whose product is rated tops in evaluations by independent consultants. The integrated suite of software for both inpatient and ambulatory services is used by around 270 health care organizations worldwide, including Kaiser Permanente, the Cleveland Clinic, and Weill Cornell Physicians. Many academic medical centers, from the University of Wisconsin Hospital and Clinics to Dartmouth-Hitchcock, are also part of the Epic community. When a plethora of implementations currently under way are complete, about 250,000 physicians—one in every four in this country—will be working in an Epic system.

Yale's "Manhattan Project"

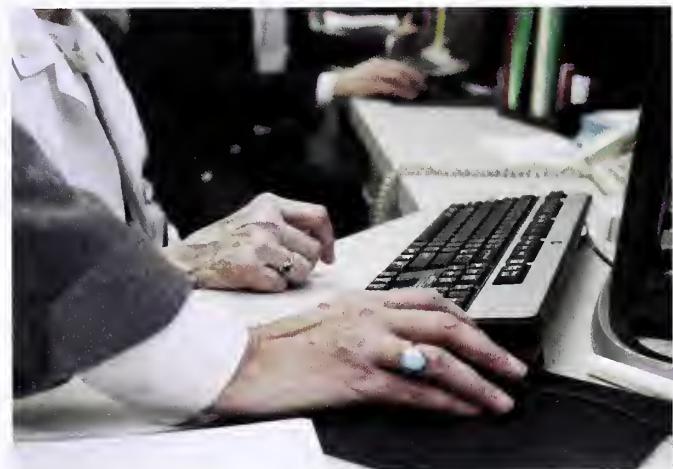
Epic was chosen, and thus began what Leffell called "our equivalent of the Manhattan Project—an incredibly complicated process that exceeds anything we've ever attempted by orders of magnitude."

The entire Epic model system, as the company calls it, consists of 19 separate but fully integrated components, from billing and scheduling modules to inpatient and ambulatory applications. But Epic is not simply plug-and-play software. It has to be built, or "personalized," to fit the needs of each organization.

Over the summer and fall of 2010, YNHHS hired nearly 200 staffers and sent them to Epic's campus in Wisconsin for training and certification. Then Team Epic, led by project director Lisa Stump; Steven Schlossberg, M.D., YMG's chief medical information officer; and Daniel Barchi, chief information officer at the School of Medicine, settled into headquarters in Stratford, Conn., and began working nonstop on what became known as the "collaborative build." Meeting regularly with a YNHHS Providers Advisory Group and subject matter experts well-versed in every conceivable aspect of the health care system from billing to bed planning, pharmacy consultation to patient care data, the team reviewed all aspects of the software with the people who'd be using it. At various points in the process, it was time for a "stoplight" vote on each part of the proposed Epic workflow. The vote was taken by a show of cards: green for "Okay, this will work for us," and red for "Let's stop and think about this."

There were thousands of votes as everyone involved in the project weighed in and shaped the end result. In addition to creating a system that seemed to meet the workflow needs of its users, the collaborative build had another critical result. It brought people, many of whom had never worked together, out of their silos. "We're building an EMR, but the true power of the Epic project may lie in helping us to form better teams that will transform our health care culture," said Edmund F. Funai, M.D., former professor (adjunct) of obstetrics, gynecology, and reproductive sciences, and then a member of the Epic project's interim leadership committee.

Their efforts were showcased in May 2011 at an event called the Work Flow Walk Through. This preview of the ambulatory application—there was a separate walk-through for the inpatient hospital side—attracted hundreds of future Epic users and left many favorably impressed by the

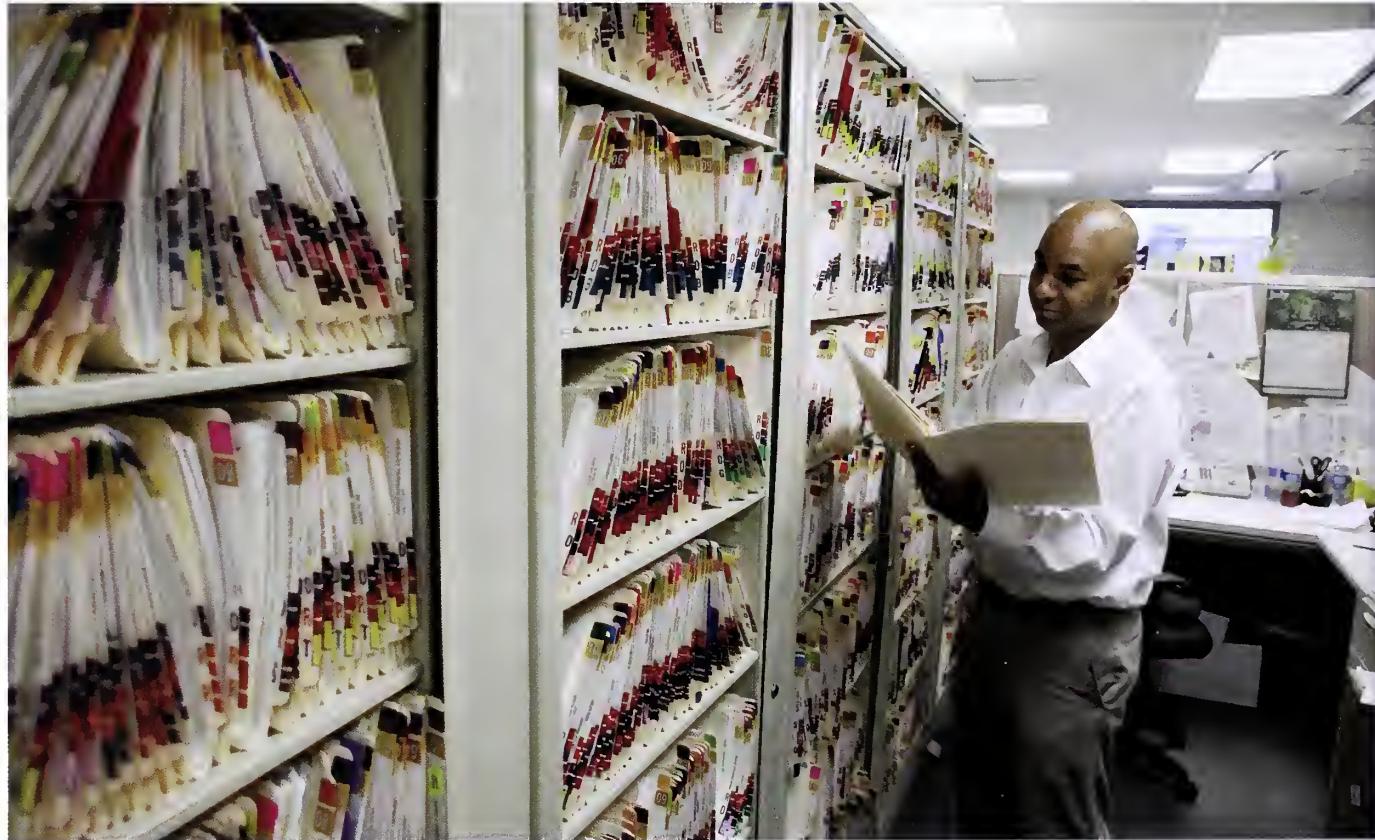


TERRY DAGRAIDI (2)

TOP When the orthopaedics department launched its EMR in March 2012, it benefited from the lessons learned by other departments. Chair Gary Friedlaender discussed the system with staff.

ABOVE Implementation of the systems was challenging as staff adapted to a new way of keeping records and had to create patient files by transferring paper records to computers.

A new electronic medical record will replace paper files that now hold patients' medical histories. Trevor Lewis, a senior administrative assistant in orthopaedics, looked over patient records.



potential power of the system. YIMA, the pioneer practice, prepared to go live that fall.

While Epic team members met with practice representatives and fine-tuned the software, there was hardware to be installed and there were extensive training sessions for everyone who'd be using the application. In addition, before the switch was flipped and the Epic login appeared on computer screens, staffers began what for many is an ongoing effort to abstract pertinent data from paper records and enter the information into a patient's EMR.

A steep learning curve

The Epic era began on a rainy Wednesday morning, October 19, 2011, at YIMA headquarters on the third floor of the Yale Physicians Building. There were festive balloons, coffee and pastries, and enough Epic systems specialists in place to make the transition smooth and seamless.

It didn't work out quite that way. As Leffell noted, the learning curve was steep. For example, right after go-live,

productivity at YIMA dropped by about 50 percent. This was anticipated and factored into the implementation timetable. But the goal of returning to normal within a month or so eluded many YIMA physicians, nurses, medical assistants, and other staffers, as it would do in other practices.

In part, the decline in productivity was due to the sheer complexity of the software, which allows different ways to accomplish the same task. "As the very first Yale practice to go live, our transition to Epic was a struggle," said Matthew Ellman, M.D., YIMA's practice director. "But although some challenges remain a year later, we are now reaping the benefits of immediate and easy access to clinical results, rapid communication among staff and with patients, and the convenience and improved safety of e-prescribing."

To be sure, working electronically and having to enter data via a keyboard on a computer screen rather than by hand in a notebook (or dictated into a tape recorder) is such a massive change in how a practice does business that slowdowns and snafus are inevitable. But some practices had easier

transitions than others. Epic's debut last March in orthopaedics was certainly not pain-free. "We walked through the fire," said practice manager Connie Rinaldi. But the flames were more a simmer than a conflagration, and they didn't burn for long because, Rinaldi continued, "We reached out to other departments to learn what worked, and we decided that we'd find solutions of our own to pass along."

The strategy was a success, and almost all the providers were able to get back up to 100 percent of their pre-Epic productivity levels within a month. But there was a cost, noted Maureen Carey, R.N., who manages the nursing staff: someone had to enter all the new data that Epic requires, and the process could add as much as 15 minutes to each appointment. The extra work, Rinaldi explained, is being managed by shifting the responsibilities of the existing medical assistants. Sending now-superfluous file cabinets to an off-site storage facility has had an unexpected benefit. "Everyone now has adequate desk space," she said. Moreover, Rinaldi and Carey expect the extra work to be temporary; as increasing numbers of patient records become part of the Epic system, the time-consuming data entries will no longer be necessary.

And computer makes three

Adding a computer to the doctor-patient encounter has not proven as disruptive as many providers had feared, said orthopaedic surgeon Jonathan Grauer, M.D. '97, a self-confessed Epic partisan. "Everybody in the beginning was nervous that having to work on a computer while the patient was in the examining room would compromise the quality of the interaction, and it felt a little strange and awkward at first," Grauer confessed.

But there are ways to blunt the oft-stated worry that the physician is taking care of a computer rather than a person, such as taking notes on paper and then transferring the data into Epic when the office visit is complete. In fact, there's research about ways to minimize computer intrusiveness; YIMA was able to incorporate such findings into the design of its examination rooms because the practice was moving to new offices in advance of going live. The trick lies in maintaining a triangular setup, with the computer equipment set off to one side so that the monitor doesn't get in the way of eye contact between doctor and patient.

Dickerman Hollister, M.D., a Greenwich oncologist, may even be taking a cue from sports bars by hanging a large monitor on a wall where everyone in the room can see what's on the screen. "I can type pretty fast, and I can be on the keyboard and facing patients at the same time," he said. "They can see what I'm doing and work with me. Epic definitely enhances our communication and better informs my patients about their care."

The ability of the system to quickly generate office-visit summaries for patients, as well as useful health care information about a particular concern, has helped change

doubters into fans. "The presence of a computer in the room is part of the price we pay for the portability of health care information," said Grauer. "We're all trying to find ways to deal with it."

Indeed, there's no longer any real choice. "EMR use is mandated by federal authorities for everyone who's in the Medicare and Medicaid arena," said Friedlaender, "so EMRs are going to be a part of our professional life. The real question we should be asking—and trying to answer—is how do we use them to maximize the quality of care we're providing?"

There are a number of ways to address this concern: some of them local, others more global. The Epic implementation required everyone involved in the process to take a hard look at workflow. Working in Epic means following the application's workflow and entering office visit data in a certain predetermined order.

"Epic imposes a discipline on a doctor's daily activities that's very beneficial, in both the short and long run," said Leffell. Using the EMR has already resulted in improvements in such areas as the way calls from patients are received, routed, and acted upon; the thoroughness of documentation; and the turnaround time for notes. "We're now able to get our notes into everyone's hands the next day—it used to take a week or two," said Grauer. "With Epic, the retrievability of all that information is just fantastic."

Hollister, who logs in from home over morning coffee, explained that the EMR "makes me more efficient. It brings me up to speed before rounds and makes it less likely I'll get surprised."

And Friedlaender, besides touting Epic's ability to provide 24/7 access to complete patient care information, offers perhaps the most compelling reasons of all to make the electronic leap. "Epic reminds us that we're creating an electronic medical record that belongs to the patient—it's not a private, inaccessible dossier," he explained. "And the EMR allows us to keep track of how well we're doing for our patients. If this transparency is threatening, then the anxiety is well deserved. As providers, we need feedback; and if Epic provides a nudge, so be it. In the end, we'll be glad we have this powerful tool available to us." **YM**

—Bruce Fellman is a writer in North Stonington, Conn.

Faculty



Marina Picciotto



Joan Steitz



Hugh Taylor



Henry Binder



Judy Cho

Neurobiologist elected to IOM

MARINA PICCIOTTO, PH.D., the Charles B.G. Murphy Professor of Psychiatry and professor of neurobiology and of pharmacology, has been elected a member of the Institute of Medicine, the branch of the National Academies charged with providing science-based advice on medicine and health to policymakers, professionals, and the public at large.

Picciotto is an authority on the molecular underpinnings of tobacco and alcohol abuse, depression, and eating behaviors, with a particular interest in the role of nicotinic acetylcholine receptors (nAChRs). In addition to playing a role in tobacco addiction, nAChRs have been implicated in Alzheimer disease and in the dysfunctional sensory processing characteristic of schizophrenia. Picciotto has also studied the effects of nicotine exposure during gestation and adolescence on learning and memory and on the neuropeptide galanin. Galanin modulates Ach release and may exert a protective effect against addiction to such drugs as cocaine, amphetamines, and opiates.

Picciotto graduated from Stanford University in 1985 with a degree in biological sciences and received a Ph.D. in molecular neurobiology from The Rockefeller University in New York City in 1992. She joined the Yale faculty in 1995 after completing a postdoctoral fellowship at the Institut Pasteur in Paris.

Picciotto, who is vice chair for basic science research in the Department of Psychiatry and associate director of the School of Medicine's M.D./Ph.D. program, also serves on the National Advisory Council of the National Institute on Drug Abuse.

Yale professor honored with two awards

JOAN A. STEITZ, PH.D., Sterling Professor of Molecular Biophysics and Biochemistry and a Howard Hughes Medical Institute investigator, has received the 2012 Pearl Meister Greengard Prize of Rockefeller University, which recognizes outstanding achievements of women scientists; and the 2012 Vanderbilt Prize in Biomedical Science. The latter prize, established by Vanderbilt University School of Medicine in 2006, honors nationally and internationally known women scientists who have "a stellar record of research accomplishments" and who have contributed significantly to the mentorship of other women in science. Prize winners receive a \$25,000 honorarium; visit Vanderbilt to meet with faculty and deliver a Discovery Lecture; and serve as mentors to women who are pursuing graduate studies in the biomedical sciences at the Vanderbilt School of Medicine. Steitz will receive the prize in May.

The Pearl Meister Greengard Prize, created by Nobel laureate and Rockefeller professor Paul Greengard, Ph.D., includes a \$100,000 honorarium.

Steitz earned her doctorate in biochemistry and molecular biology from Harvard in 1967. Following a postdoctoral fellowship in Cambridge, England, she joined the Department of Molecular Biophysics and Biochemistry at Yale. Steitz is perhaps best known for discovering and defining the function of small nuclear ribonucleoproteins (snRNPs), cellular complexes that play a key role in splicing and processing pre-messenger RNA—the earliest product of DNA transcription.

School of Medicine names new chair of ob/gyn

HUGH S. TAYLOR, M.D., HS '92, FW '98, was named chair of the Department of Obstetrics, Gynecology, and Reproductive Sciences at the School of Medicine, and chief of obstetrics and gynecology at Yale-New Haven Hospital, effective October 1, 2012. Taylor has served as professor and vice chair of obstetrics, gynecology, and reproductive sciences, and as chief of reproductive endocrinology and infertility. Taylor's research has been funded by the NIH for more than 20 years. He is the editor in chief of the journal *Reproductive Sciences* as well as editor of *Endocrinology*. He serves on the board of directors of the American Society for Reproductive Medicine (ASRM), where he is president-elect of the endometriosis interest group; he also serves on the governing council of the Society for Gynecologic Investigation (SGI). Taylor received the President's Achievement Award from the SGI in 2008.

As chief of reproductive endocrinology and infertility, Taylor has expanded the clinical capability and geographic reach of this critical service. Under his leadership, the section has established itself as a national leader, reflected in Taylor's role as clinical director of the Society for Assisted Reproductive Technology, the organization that governs in vitro fertilization practice in the United States. He has been recognized as Mentor of the Year by the American Congress of Obstetricians and Gynecologists and as Honoree of the Year by the Endometriosis Foundation of America. He has received multiple research awards from the ASRM, the SGI, and the Endocrine Society.

Chair endowed for GI studies

HENRY J. BINDER, M.D., professor emeritus of gastroenterology, and his wife, Joan W. Binder, have endowed a full professorship for a physician-scientist in the field of gastroenterology. **JUDY H. CHO, M.D.**, was named the first Henry J. and Joan W. Binder Professor of Gastroenterology.

Binder has devoted his career to studying gastrointestinal disorders and diarrheal diseases—a major problem in many developing countries. He came to Yale as a postdoctoral fellow in gastroenterology in 1963. He had developed an interest in the field while a student at New York University School of Medicine, where he stayed on as an internal medicine resident at Bellevue Hospital. Binder was director of the General Clinical Research Center at Yale-New Haven Hospital for 21 years and established two NIH-supported training programs. Binder maintains an active clinical practice at the School of Medicine that focuses on patients with inflammatory bowel diseases and unexplained chronic diarrhea. In recent years, with support from the Gates Foundation, Binder has worked to reformulate oral rehydration solution—a recipe that combines salt, sugar, and water in the proper ratio—for the treatment of diarrhea in children.

Cho, professor of medicine (digestive diseases) and of genetics, is the director of the Inflammatory Bowel Disease Center. Her research seeks to identify genetic variations that affect susceptibility to and expression of inflammatory bowel disease.



Daniel DiMaio

Thomas Gill

Andrew
Goodman

Valentina Greco

Gil Mor

Jamie Morano

Clarence Sasaki

Daniel C. DiMaio, M.D., PH.D., the Waldemar Von Zedtwitz Professor of Genetics and scientific director and deputy director of Yale Cancer Center, has been appointed to a five-year term on the Board of Scientific Advisors of the National Cancer Institute (NCI). The board assists and advises the director of the institute, with a primary focus on oversight of the full portfolio of the NCI's extramural programs. The board also provides advice on scientific policies and reviews concepts for research and related activities supported by the NCI.

David S. Fischer, M.D., clinical professor of medicine (oncology), received the Richard Blumenthal Patient Advocate for Life Award from the Connecticut Hospice during its Legacy Ceremony on September 23. Fischer helped to found Connecticut Hospice, the first hospice in the country, in 1974.

Thomas M. Gill, M.D., Human Professor of Medicine (Geriatrics) and professor of epidemiology and of investigative medicine, received the 2012 Joseph T. Freeman Award from the Gerontological Society of America. The award, a leadership in geriatrics, is conferred on a physician prominent in both research and practice in the field of aging. The award was presented at the society's annual meeting in San Diego in November.

Andrew L. Goodman, PH.D., assistant professor in the Department of Microbial Pathogenesis and at the Yale Microbial Diversity Institute on the West Campus, has received a 2012 NIH Director's New Innovator Award. Presented by the National Institutes of Health, the honor is intended to encourage new laboratories to launch innovative biomedical and behavioral research. The \$1.5 million, five-year award will enable Goodman and his team to develop new approaches to understand the effects of the body's resident bacteria on human health. Goodman's team will use mice raised without any intestinal microbes of their own to investigate whether differences in the composition of bacterial communities in the gut—as well as differences in human genome sequences—affect drug metabolism.

Valentina Greco, PH.D., assistant professor of genetics and of dermatology, received an R01 grant from the National Institutes of Health for her project, "Live Imaging of Skin Regeneration." The five-year grant for \$1.9 million will fund high-resolution live imaging studies of the cellular and signaling mechanisms that govern tissue regeneration in hair follicle stem cells. Greco is a member of the Signal Transduction Research Program at Yale Cancer Center.

Valerie Horsley, PH.D., the Maxine F. Singer, PH.D. '57 Assistant Professor of Molecular, Cellular, and Developmental Biology, has received a Presidential Early Career Award for Scientists and Engineers, the highest honor bestowed by the

U.S. government on outstanding scientists and engineers beginning their independent careers. Horsley received the honor for her studies of the extrinsic regulation of epidermal homeostasis. She is one of 20 scientists to receive the award in 2012.

Gil G. Mor, M.D., PH.D., professor of obstetrics, gynecology, and reproductive sciences, received the 2012 *American Journal of Reproductive Immunology* Award for outstanding contributions to reproductive immunology. The award was conferred by the American Society for Reproductive Immunology at a joint international conference in Hamburg, Germany, in May.

Jamie P. Morano, M.D., M.P.H., a third-year fellow in the program of infectious diseases in the Department of Internal Medicine, was selected as a *New England Journal of Medicine* Gold Award Winner for her essay on technology and medicine titled "HIV/AIDS 2.0," as part of the journal's 200th anniversary. Morano works with Frederick L. Altice, M.D., HS '89, on issues of identification, screening, and treatment of HIV, hepatitis C, and latent tuberculosis among immigrant groups and other underserved populations. Morano also served as the elected representative of the infectious disease section on the School of Medicine's Graduate Medical Education Committee for 2011-2012.

Don Nguyen, PH.D., assistant professor of pathology, received an R01 grant from the National Cancer Institute for his project, "A Novel Lineage Specific Metastasis Suppressor Pathway in Lung Cancer." The five-year grant for \$1.1 million will fund research into the ways in which fundamental molecular circuits that control airway development are rewired during lung adenocarcinoma metastasis. Nguyen is a member of the Signal Transduction Research Program at Yale Cancer Center.

John D. Roberts, M.D., director of the Adult Sickle Cell Program at Yale-New Haven Hospital, received the Harry Hynes Award from the Community Clinical Oncology Program (ccop), in the Community Oncology and Prevention Trials Research Group, a program within the NCI's Division of Cancer Prevention. The ccop is a network for testing and validating medical interventions against cancer and for delivering the benefits of scientific discovery to the public and community physicians. The award honors excellence in research related to community clinical oncology programs.

Clarence T. Sasaki, M.D. '66, HS '73, the Charles W. Ohse Professor of Surgery (Otolaryngology), has been named president of the American Laryngological Association (ALA). The ALA is one of the premier organizations in otolaryngology and is a major supporter of research, education, and academic issues related to laryngology.

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Claire M. Bessinger, *Yale Medicine*, 1 Church Street, Suite 300, New Haven, CT 06510, or via e-mail to claire.bessinger@yale.edu

Med school on the five-year plan

At a time when some are calling to shorten medical school, many Yale students are extending it.

Like most of his classmates, Julius Oatts is staying on at the School of Medicine for a fifth year of study. This option, available for more than 20 years, has become increasingly



Julius Oatts stayed on for a fifth year at the medical school, an increasingly popular option for medical students. Oatts spent the year working with a mentor in ophthalmology and getting a feel for the life of a physician-scientist.

popular, with as many as two-thirds of each class adding a year to their medical studies, primarily to do research. For Oatts, an extra year gives him the chance to try on the lifestyle of a physician-scientist. "It's easy to say you're interested in patient care and research in the beginning of med school, but this is the first time that I have seen what the day-to-day of that is like, both the challenges and the benefits," Oatts said, who's doing research in ophthalmology. "You take a project and it's yours for the year."

At a time when some are calling to shorten medical training, more than half of Yale students are choosing to extend it. A March 21 article in *The Journal of the American Medical Association* called for a reduction in medical training by 30 percent by 2020, arguing that the lengthy and expensive training is a driver of high health care costs. Other articles call for accelerating medical education to address physician shortages, citing lack of evidence that longer training makes a better doctor. Dozens of schools are putting this theory to the test with six- to seven-year combined BS/M.D. programs. Some medical schools are offering students a three-year plan. Yale students are sticking around, however, to carry out research, bolster residency applications, explore career options—or maybe take one last year to focus on things other than medicine. While some other medical schools offer additional time for predefined research projects, Yale is unique in the absolute freedom it gives students.

The first students to take a fifth year to do research did so in the 1980s. For many years the number held steady at about half the class. In 2007, however, three-quarters of the class stayed on for a fifth year. About half the next year's class took a fifth year; in subsequent years the number of students staying on has hovered between two-thirds and three-quarters of each class—65 students who started with the

year, or more, to earn a joint degree in public health, public policy, business administration, or theology.

"If there's 70 people that do it, there's 70 different things that they'll get out of it and put into it," said Michael Soule, M.D. '12, who spent his fifth year researching substance abuse treatment in correctional facilities, serving on the admissions committee, and taking a class on his favorite poet, Wallace Stevens. "Literature and writing keep me afloat as a person," said Soule, who began his residency in psychiatry at Massachusetts General Hospital last summer.

Zahir Kanjee, M.D. '11, studied art history, Spanish, European literature, and kept up with *The New England Journal of Medicine*. He also squeezed in workouts, time with friends, and three months in South Africa researching drug-resistant TB. Kanjee, now an internal medicine resident at Brigham and Women's Hospital in Boston, said students have dubbed the four-year route at Yale "the accelerated track."

The fifth year at Yale is tuition-free, though some students may need additional loans to cover living expenses. The payoff, they said, is immeasurable. It's been called the best year of medical school by many. "It's a wonderful opportunity that most med students don't get," Kanjee said. "It made me a better person, a better doctor, a happier and more complete person."

But with more than half the class adding a year to already lengthy training, is there simply too much to do in four years at Yale? For some students, the four-year track is too over-scheduled to make a career decision, conduct in-depth research, and take advantage of what Yale offers outside the med school.

"One of the biggest things that I think drives our students to take a fifth year is that there isn't enough time in the third year to make a career decision," said Nancy Angoff, M.P.H. '81, M.D. '90, H.S. '93, associate dean of student affairs. The third year, with its

Class of 2011, and 57 who began their studies with the Class of 2012.

Originally devoted to a year of full-time research, the fifth year was born out of a recognized decline in physician-scientists, said John Forrest, M.D., H.S. '67, professor of medicine and director of the Office of Student Research. Meanwhile, the months available for research in the four-year curriculum had slipped over the years from about 11 to five and a half as new requirements were added.

"Students who conduct 12 months of full-time research receive full fellowships of \$24,000 to \$28,000 per year. These fellowships are supported by grants from the Howard Hughes Medical Institute, our NIH CTSA-TL1 grant, the Doris Duke Charitable Foundation, the American Society of Nephrology, the American Heart Association, and Yale-endowed one-year research fellowships," Forrest said. "Many funding agencies supporting research are alarmed at the national decline in physician-scientists and have stepped up to the plate. They recognize that careers as physician-scientists often begin in medical school, particularly at research-intensive institutions such as ours."

About half the students taking a fifth year spend only part of the time doing research in what's called a partially funded or "flexible" fifth year. Their months of full-time research are funded at the NIH predoctoral rate. The year might include research and rotations abroad. Students also audit undergraduate classes and do elective rotations—two went to culinary school and wrote a nutrition curriculum for the medical school. Others take the

required clerkships in the core areas of medicine, has a tight schedule.

That's one reason Mei Elansary, M.D. '12, who started a residency in pediatrics at Children's Hospital Boston after graduation, took a fifth year. "My third-year exposure wasn't quite enough to decide if [pediatrics] was for me," so an elective in pediatric emergency medicine during her fifth year helped finalize the decision.

Students who take a fifth year also tend to finish medical school with numerous publications and national meeting presentations on their résumés. "They've heard it will help their residency applications, especially in fields where there is a lot of pressure to do research in that area and publish," Angoff said.

A framework for overhauling the curriculum is now under way and will likely give students additional time for research and electives. Opinions are mixed among faculty and students as to whether this change will affect the number of students who stay on for an extra year. Some insist that the fifth year, symbolic of the medical school's culture of independent research and a thesis, isn't going to change.

"Treating students with the understanding that we are going to be professionals who are all interested in different things, and putting the resources behind us to pursue our interests at the depth that we want—that trust and commitment to the students is reflected in the fifth year," Soule said. "I think it's really a reflection of the greater ethos of the school."

—Sonya Collins



Kyeen Mesesan Andersson uses mathematical models to predict the paths of infectious disease.

Doing the math to fight infectious disease

An infectious disease specialist applies mathematical modeling to predict the paths of deadly viruses.

Kyeen Mesesan Andersson, M.D. '07, Ph.D. '07, has always liked math. She knew from childhood, too, that she wanted to be a scientist. At Brown University she began her undergraduate studies with physics and switched to molecular biology. Then, just before graduation, a “life-changing” class in vaccine development set her on a path that led through infectious disease research and medicine before returning her full circle to math.

First stop: two years as an emerging infectious diseases fellow with the Centers for Disease Control and Prevention, where Andersson worked as a virologist on the dengue fever vaccine development team, devising mutant clones that might weaken the virus and be incorporated into a vaccine. At a conference, she met an official in the U.S. Army Medical Research Institute of Infectious Diseases who offered to send her to Peru so she could gain clinical experience with the disease.

She spent a month in the Amazon port of Iquitos, where she saw many people infected by the virus she knew so well from the lab. Seeing the clinical picture, she became fascinated by the possibility of bridging the gap between science and medicine. That clinched her decision to apply to M.D./Ph.D. programs.

Andersson entered the School of Medicine in 1999. At an AIDS conference during medical school she

discovered a third approach to infectious disease: one of the speakers was Sir Roy Anderson, Ph.D., a British epidemiologist known for his predictive mathematical models of Creutzfeldt-Jakob disease and AIDS. “I remember being absolutely amazed that you could use math to forecast disease growth and disease processes,” Andersson said. She was hooked.

Under faculty advisors David A. Paltiel, Ph.D., professor of public health, and Linda M. Niccolai, Ph.D., associate professor of epidemiology, Andersson spent three years in South Africa creating a mathematical model of the HIV epidemic in Soweto as well as surveying adults on their sexual risk-taking behaviors. Her aim was to predict whether changes in behaviors that resulted from taking an HIV vaccine would have an effect on the HIV epidemic.

Policymakers deciding on new disease interventions can't wait the years that it takes to collect and analyze data, so they may rely instead on mathematical simulations, Andersson explained. No one knows, for instance, whether people who have received a partially effective HIV vaccine would take more or fewer precautions, nor the effects their post-vaccination behaviors might have on the virus' spread. Andersson's Ph.D. thesis created a model to answer just such questions. A vaccine that's merely 30 percent effective, she found, could still save lives. Three large clinical trials in Africa had shown that male circumcision could reduce transmission of HIV from women to men. Intrigued by those findings, she also modeled male circumcision and HIV transmission in Soweto, and found that an adult male circumcision program could greatly reduce the expected number of new infections. Those results made world headlines after she presented them at the 16th International AIDS Conference in Toronto in 2006.

After graduating from Yale she signed on as a postdoctoral fellow at the School of Public Health and explored the gender dynamics of HIV-preventive

An alumnus' singular calling to medicine and ministry

"Go to church this Sunday" was the prescription that Benjamin R. Doolittle, M.DIV. '94, M.D. '97, wrote for a patient addicted to heroin. "Bring the church bulletin to our next appointment," he said.

The patient had wanted to attend church but feared that the congregation would judge her. So Doolittle gave her the little push he knew she needed. She came to the next appointment, bulletin in hand, glad she had gone. "The cure for addiction is never a pill," said Doolittle, associate professor of medicine and of pediatrics at the School of Medicine. A person's spirit must be renewed, their self-esteem rebuilt, and their shame released. "Medicine is this fusion of science and emotion and spirituality. As physicians we are more than technicians."

Though he wears a white coat on weekdays and a black robe on Sundays, he sees these two roles as "one singular call."

"I don't see myself as a physician during the week and a minister on the weekend—there's just me," he said.

Ever since Doolittle felt "the call" in his senior year at Yale College, where he studied biology and philosophy, he knew he wanted to pursue both medicine and the ministry. He was attracted to the "fix-it mentality" in medicine, but his volunteer work at a New Haven soup kitchen and a children's theater program led to a love for community outreach that he could harness as a minister. "What's so great about medicine is the stories and the relationship building that happen, and that very much feels like a ministry," he said.

He enrolled in divinity school first to get his "spiritual life squared away," knowing that once he began medical school it would be tough to take a break. The seeds of his spirituality had been planted while growing up in Schenectady, N.Y., where he had attended a Protestant church; but it had

been truly awakened during a gap year in Paris between high school and college. Doolittle spent many lonely afternoons wandering the streets and sitting inside beautiful cathedrals. "I realized that I needed other emotional and spiritual resources for a sense of peace and happiness because I didn't have the familiar anchors of my home," he said. "Slowly, a sense of faith and prayer life became real to me."

In Doolittle's first year of divinity school, one of the deans asked him to preach a few sermons for an inner-city church that was between ministers. He had no prior preaching experience; however, Pilgrim Congregational Church was on the verge of closing and couldn't afford a pastor. Why else would they take a medical student for a minister? Doolittle joked. Or even worse: a resident.

The night before that first Sunday he borrowed a black robe and drank nearly a gallon of coffee to stay up writing the sermon. He took a scene from *Butch Cassidy and the Sundance Kid* in which the title characters are shooting at a target, and related it to faith: "If you follow your instincts and heart, instead of overthinking, you will hit the target." The congregation asked him to preach the next Sunday, and every Sunday all through his medical school days. "I would have to write my sermons on hospital note paper," he said.

Doolittle often told the stories of the wards from the pulpit; conversely, in the hospital he offers his patients spiritual counsel. And theological and medical problems may overlap and become indistinguishable. A patient with HIV, certain she was going to die, turned to faith. When her health

circumcision programs. Her new model showed that while widespread male circumcision could reduce new infections, it could also *increase* new infections among Soweto women. The reason? Circumcised men may skip condoms—and women there may lack the power to demand their use.

Since 2010, Andersson has continued developing mathematical models at the Futures Institute in Glastonbury, Conn., for clients like the Gates Foundation, UNAIDS, and health ministries overseas. She and her husband Richard, a South African engineer who works at Yale's Office of Cooperative Research, are the parents of 2-year-old Amelia and 1-year-old Alexis.

Partly because of her four-year delay between college and medical school, Andersson, 39, decided to forgo residency training. "In an ideal world, I would have done both clinical medicine and research," she said. "I chose to do what was closest to my heart." She had once asked her mentor at Brown, Anne De Groot, M.D., how she juggled research, family, and a medical practice.

"That's when I discovered that she had an ex-pro-hockey-player husband who was raising both kids and keeping house," Andersson recalled, laughing.

Though she misses clinical care, Andersson loves the power of mathematical modeling. A recent question from one of the institute's clients underscored that for her.

"When Bill Gates comes and asks you, 'How much is it going to cost to treat everyone in the world [who has HIV]?' " she noted, "it's probably for a good reason."

—Jenny Blair

started to improve, she stopped taking her medications, convinced that God had healed her. Her viral load crept up and her T-cell population diminished. Doolittle urged her to resume her medications, and now she sees medicine not as separate from her faith but as "a gift from God."

Doolittle continues in his dual roles. On the medical school faculty he is the program director of the Combined Internal Medicine and Pediatrics residency program. As the minister of social action at South Church in New Britain, he provides support for the church's outreach programs, much like the work he did as president of the cabinet of Dwight Hall as an undergraduate. He also officiates at the weddings of students and faculty. This August he officiated at the wedding of two recent graduates, Matthew Vestal, M.D. '11, and Heather Speller, M.D. '11, at a vineyard in Stonington, Conn.

—Natalie Villacorta

Familiar Faces

Do you have a colleague who is making a difference in medicine or has followed an unusual path since leaving Yale? We'd like to hear about alumni of the School of Medicine; Physician Associate Program; and the medical school's doctoral, fellowship, and residency programs. Drop us a line at ymm@yale.edu or write to Faces, Yale Medicine, 1 Church Street, Suite 300, New Haven, CT 06510.



TERRY DAGRADI

With degrees in both theology and medicine, Benjamin Doolittle offers spiritual counseling and medical care.



Howard Ozer



Steven Scheinman



Douglas Wallace



Paul Rothman



Rahn Bailey



Jeffrey Lyness



Sara Nayeem and George Bell

1970s

C. Norman Coleman, M.D. '70, was honored with a University of Vermont Alumni Achievement Award at the annual Reunion & Homecoming weekend on October 5. Coleman graduated from the University of Vermont in 1966 with a bachelor of arts in mathematics. He trained in internal medicine at the University of California, San Francisco; in medical oncology at the National Cancer Institute; and in radiation oncology at Stanford University.

Coleman is associate director of the Radiation Research Program in the Division of Cancer Treatment and Diagnosis and special advisor to the director of the National Cancer Institute.

Howard Ozer, M.D. '75, PH.D. '75, has been named director of the University of Illinois Cancer Center. Ozer joined the faculty there in 2010 as the Eileen Lindsay Heidrick Professor in Oncology and chief of hematology/oncology, and has served as interim director of the cancer center since January 2011. Ozer is internationally known for research in the development of hematopoietic growth factors and cytokines and for clinical trials of biological therapies for leukemia and lymphoma.

Steven J. Scheinman, M.D. '77, HS '80, FW '84, was named president and dean of The Commonwealth Medical College in Scranton, Pa., as of September 10. Scheinman had been professor of medicine and pharmacology

at SUNY Upstate Medical University and served as its senior vice president and dean of the College of Medicine from 2004 to 2011.

Douglas C. Wallace, PH.D. '75, a genetics researcher who founded the field of mitochondrial genetics in humans, received the 2012 Genetics Prize of the Gruber Foundation in November. Wallace was honored for his groundbreaking achievements in helping scientists understand the role of mitochondria in the development of disease and as markers of human evolution. He received the award in New Orleans at the annual meeting of the American Society of Human Genetics.

1980s

Paul B. Rothman, M.D. '84, was appointed in December 2011 as the 14th dean of the Johns Hopkins University School of Medicine and second chief executive officer of Johns Hopkins Medicine, a combination of an academic medical center and a health system with a global reach. Rothman, a rheumatologist and molecular immunologist, previously served as dean of the Carver College of Medicine at the University of Iowa and as leader of that university's clinical practice plan. He succeeds Edward D. Miller, M.D., who retired after 15 years as both dean and the first CEO of Johns Hopkins Medicine.

1990s

Rahn K. Bailey, M.D., FW '95, associate professor and chair of the Department of Psychiatry and Behavioral Sciences at Meharry Medical College, was installed as president of the National Medical Association (NMA) on July 31 at the association's 2012 Annual Convention and Scientific Assembly in New Orleans. NMA is the largest and oldest national organization representing African-American physicians and the patients they serve. A graduate of Morehouse College, Bailey received his medical degree from the University of Texas Medical Branch in Galveston, Texas. He completed his residency in psychiatry at the University of Texas at Houston and completed a fellowship in forensic psychiatry in the Department of Psychiatry at the School of Medicine.

Jeffrey M. Lyness, M.D., HS '90, professor of psychiatry, became the senior associate dean for academic affairs at the University of Rochester School of Medicine and Dentistry on July 1. Lyness, who was appointed associate dean for academic affairs a year ago, has been director of curriculum for medical student education since 2008 and medical director of continuing medical education since 2010. He is past president of the American Association for Geriatric Psychiatry.

William Pao, PH.D. '97, M.D. '98, was honored for his leadership in lung cancer research by Joan's Legacy: Uniting Against Lung Cancer at its "Strolling Supper with Blues and News" gala in New York City in November.

Pao is director of the Division of Hematology and Oncology, director of Personalized Cancer Medicine, and professor of medicine, cancer biology, and pathology/microbiology/immunology at Vanderbilt University.

2000s

Sara M. Nayeem, M.D. '06, M.B.A. '06, and George W. Bell IV, M.D., were married on August 11 in Alexandria, Va. Nayeem works at New Enterprise Associates, a venture capital firm in Chevy Chase, Md., where she directs the firm's investments in biopharmaceutical companies. Bell is a cardiologist at CardioCare, a clinic in Chevy Chase.

2010s

Alisse K. Hauspurg, M.D. '12, and Adam J. Janicki, M.D., were married on June 2 in Stonington, Conn. The couple met as undergraduates at the University of Pennsylvania. Hauspurg is a resident in ob/gyn at Women and Infants Hospital of Rhode Island in Providence. Janicki received his medical degree from Tufts and is a resident in emergency medicine at Rhode Island Hospital in Providence.

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In memoriam

Festus Olumiwa Adebomojo, M.D. '60, HS '63, professor emeritus of pediatrics at Eastern Tennessee State University, died in Johnson City, Tenn., on June 25. He was 81. Adebomojo was the first Nigerian to graduate from Yale University and the first Nigerian to complete an M.D. and residency training at Yale.

Richard J. Apell, doctor of optometry, died on May 30 in Madison, Conn. He was 90. Apell was head of the Optometric Department of the Gesell Institute of Human Development in New Haven between 1950 and 1960.

Edith M. Beck, M.D. '48, died on August 17 in Greenwich, Conn. She was 91. Beck was chair of the general medical section at Greenwich Hospital for many years and had been a clinical instructor at the School of Medicine.

Allan A. Brandt, M.D. '51, died in Milford, Conn., on May 1. He was 89. As director of Emergency Medical Services at Milford Hospital, Brandt was instrumental in establishing the city's first Emergency Medical Services Council whose efforts allowed Milford to be a pioneer participant in the national 911 system.

Jane B. Cadbury, M.D. '43, one of the first women to juggle a career as a physician with raising children, died on July 7 in Framingham, Mass. She was 94. Cadbury was one of only three women in her medical school class and became the first woman to be promoted to district director of the Saint Louis County Health Department in the early 1960s. After moving into public health she spent more than 20 years as a physician in the health service at the University of Wisconsin-Milwaukee.

Anthony P. Cipriano, M.D., HS '69, died on May 25 at his home in Branford, Conn. He was 96. As a captain in the Army Medical Corps during World War II, Cipriano landed on the beaches

of Normandy on D-Day, witnessed the liberation of Paris, and was wounded in the Battle of the Bulge. On his return to New Haven, he became one of the first specialists in internal medicine. In 1969 he completed a residency in dermatology at Yale and practiced in New Haven and East Haven until he retired in 2003 at the age of 87.

John Dana Clark, M.D., died on June 30 in Madison, Conn. He was 79. Clark had been chief of anesthesiology at Yale-New Haven Hospital and an assistant clinical professor of anesthesiology at the School of Medicine.

John P. Ferguson Jr., M.D. '39, a retired obstetrician/gynecologist, died on June 30 in Springfield, Mo. He was 97.

Edward J. Gerety, M.D. '54, a retired thoracic and cardiovascular surgeon, died on September 7 in Albuquerque, N.M. A fighter pilot in the Marine Corps during World War II, he was 93.

George W. Greenman, M.D., FW '59, HS '65, died on May 16 in Tucson, Ariz. He was 85. A retired psychoanalyst, Greenman began his career as a pediatrician but later completed a medical residency in psychiatry at Yale-New Haven Hospital.

Henry H. Jones, M.D. '43, HS '46, professor emeritus of radiology at the Stanford University School of Medicine, died at his home on campus on August 11. He was 95. Jones was a key member of the team that built the department into a powerhouse in the field. He was the first chief of the radiology service at the Palo Alto Veterans Administration Hospital, now the Veterans Affairs Palo Alto Health Care System. Jones was a founding member of Physicians for Social Responsibility and a leader in the movement to eliminate the threat of nuclear war and weapons of mass destruction.

Edith M. Jurka, M.D. '44, died on May 19 in Clearwater, Fla. She was 96. A longtime resident of Croton-on-Hudson, N.Y., Jurka had a private practice in psychiatry.

Jerome "Jerry" Kaye, M.D. '44, a retired pediatrician, died on May 28, in Boulder, Colo. He was 93. Kaye practiced pediatrics in Phoenix from 1947 to 2002 and was part of a group of doctors who helped make Phoenix Children's Hospital a reality.

Frederick Martin Lane, M.D. '53, HS '59, a former clinical professor of psychiatry at the Columbia University College of Physicians and Surgeons, died on June 12 in New York City. He was 84.

Walter E. Needham, PH.D., who served in the departments of psychiatry, psychology, and neurology at the School of Medicine, died on June 6 at his home in Madison, Conn., after a long battle with cancer. He was 76.

Eveline B. Omwake, M.A., died in Black Mountain, N.C., on August 19. She was 100. Omwake was assistant professor in the Child Study Center from 1952 to 1964 and also served as the director of the center's Laboratory Nursery School.

Fitzhugh C. Pannill Jr., M.D. '45, died on June 30 in New Braunfels, Texas, after a brief illness. He was 90. In 1965 Pannill was named dean of the new University of Texas Medical School at San Antonio, where he recruited faculty, students, and staff to establish what was soon recognized as a world-class medical institution. In 1973 he was recruited to the State University of New York at Buffalo, where he served as vice president of health affairs, acting dean, and professor of medicine.

William L. Roberts, M.D., PH.D., HS '91, FW '95, medical director at ARUP Laboratories and a professor at the University of Utah School of Medicine, died in Salt Lake City on July 26 following a

year-long battle with brain cancer. He was 52. In 1998, Roberts joined the University of Utah and ARUP as assistant professor in clinical chemistry, and he became a full professor in 2007.

Richard H. Saunders Jr., M.D., HS '49, a retired professor of medicine, died at his home in Middlebury, Vt., on August 12. He was 93. Saunders helped to create the University of Massachusetts Medical School in Worcester, Mass., where he was professor of medicine and associate dean from 1969 to 1982.

Paul H. Seton, M.D. '52, HS '53, a retired psychoanalyst, died of pneumonia in Northampton, Mass., on May 22. He was 88. Seton had been director of counseling services at Smith College, taught at the Smith College School of Social Work, and maintained a private psychoanalytic practice.

Roy B. Sherman, M.D. '58, HS '61, of Winsted, Conn., died on June 13, his 83rd birthday. Sherman had been chief of anesthesiology at Winsted Memorial Hospital.

Bernard Snow, M.D., HS '61, a retired psychiatrist who practiced in New Haven for many years, died at Yale-New Haven Hospital on September 10. He was 81.

Marc J. Taylor, M.D., HS '66, FW '68, of Southbury, Conn., died on June 5 at Smilow Cancer Hospital in New Haven. He was 75. Taylor was head of the liver study unit at the VA Connecticut Healthcare System in West Haven. He had been a clinical associate professor of medicine at Yale and attending physician at Waterbury Hospital.

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JOHN CURTIS

Art exhibit honors anatomy lab donors

Unused cubbyholes outside the anatomy labs in The Anlyan Center have become home to student works of art that honor the donors who contributed their remains for medical training. Students who completed anatomy studies in 2012 worked in teams to create small boxes that reflect their feelings about their work with the donors.

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Targeting cancer

While some Yale scientists partner with industry to develop new cancer drugs, others want to know whether stem cells are to blame for cancer.

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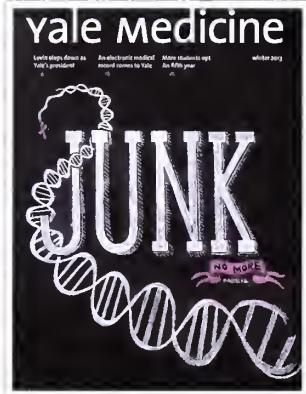
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Illustrations by Sophie Casson

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Meeting alumni on the residency trail

One of the highlights of my residency interview season was meeting alumni of our school. These encounters were among the most pleasant on the interview trail because the conversations would frequently turn to the Yale system. Having represented my colleagues on the school-wide Educational Policy Committee during medical school, I had the special privilege of helping carry out the committee's charge to interpret the philosophy of the Yale system and articulate its manifestation amid the challenges of modern medical education. With a certain pride and responsibility, I assured my alumni interviewers that indeed, there are still no class rankings or attendance lists; and yes, the thesis requirement still runs the graduating class a bit ragged around this time of year.

The unexpected reward from these interviews was discovering what happens after Yale. On the cusp of my own graduation I have wondered whether the Yale system and its pillars of self-motivated learning and innovation will still matter a few months from now. The answer, from the experiences of those who have come through the Sterling Hall of Medicine before me, is a remarkable 'yes.' One interviewer demonstrated the iPhone app he had designed to help patients track their lab results over time. Another described the fruitful collaborations she has made with faculty across her university to improve health outreach in the community. Another showed me pictures from her recent exhibition of paintings—a hobby she developed during an elective course at the Yale School of Art. What binds their stories together is not that Yale taught them how to program software, or find collaborators, or apply oil to canvas. These alumni suggested to me that the Yale system fostered an environment that encourages lifelong opportunities to augment their learning. They became physicians alongside the

exploration of complementary interests, not in spite of it.

As I prepare to retire my short white coat, I recognize now that the three words emblazoned across the left pocket—Yale Medical Student—represent much more than the position I have held for four years. I have been deeply inspired by the stories of these former students of medicine at Yale, and I am hopeful that my career as a physician will continue to be shaped by the Yale system, which has distinguished the school for over 80 years—and, as I have come to understand, finds new meaning in the lives of its graduates.

*Kevin Koo, M.D. '13
New Haven, Conn.*

Writing and medicine

The Internal Medicine Writers' Workshop was a big draw for me when I was interviewing for residency [*"Writers' Workshop Celebrates 10 Years," Yale Medicine Online*, Winter 2013]. I was an English major in college and I started to write stories about my experiences with patients during my third year of medical school. I began writing, and still do so, primarily as an outlet for the stresses of life in medicine. The first story I wrote was about an experience I had in med school taking care of a young woman who lost a baby during her second trimester. I write because the patients that we see every day—and their stories—are important. The Writers' Workshop has been the perfect outlet for me to share these stories. In the workshop, I have seen emotions and passions in my coworkers and friends that I had not witnessed while working side-by-side with them for 80 hours a week for the past few years. It's a safe environment where we can share thoughts and feelings without the pressured constraints of daily clinical life. Through my participation in the Writers' Workshop, I have been reminded of why I went into medicine—the interpersonal relationships, the ability to help heal others, sometimes simply by listening.

I am so thankful that we have the Writers' Workshop. It has helped to make me a more empathetic and well-rounded physician, and has made a major impact on me during these formative years in my training.

Paul Fiorilli, M.D.

*Department of Medicine
Yale-New Haven Hospital*

The complexities of EMRs

I enjoyed reading "Yale's Epic Challenge" in the Winter 2013 *Yale Medicine*. As a former CMIO who trained in medical informatics and clinical computing at Yale, I know the challenges of EMR implementation are considerable, especially for an organization as large and complex as the Yale Health System. In fact, the term "EHR" is an anachronism; what Yale and others are now implementing are not simply electronic filing systems but enterprise-wide clinical resource and clinician control systems, with all the complexity that implies.

I do hope that Yale has learned well from the trials and tribulations of others' prior efforts. I still note many difficulties with commercial EHRs, resulting in unintended consequences up to and including patient injury and death.

Finally, I note that the statement [by one of the physicians quoted in the article] that "EMR use is mandated by federal authorities for everyone who's in the Medicare and Medicaid arena" is not accurate. While there are reimbursement penalties for non-adopters of HHS—"certified" EHRs in those programs, there are no federal or state requirements for their use.

Responsibility for the choice of EHR adoption and liability for patient safety problems that may result falls fully on the adopters. Health care leadership should remain ever mindful of this.

*Scot Silverstein, M.D., FW '94
Philadelphia, Pa.*

yale medicine

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A new look for Yale Medicine

As it happens both of this issue's feature stories are about cancer. Marc Wortman reports on a controversial theory that holds that certain stem cells underlie cancer and that identifying these cells can lead to new possibilities for treatment. Kara Nyberg reports on a partnership between the School of Medicine and Gilead Sciences in which the pharmaceutical company underwrites research at Yale that could lead to new targets for drugs to fight cancer. Having two articles on a related topic in this issue owes more to serendipity than our editorial pre-science, but starting with our autumn issue, the features in *Yale Medicine* will all be linked by a theme in science or medicine. This focus will allow us to explore in depth advances in science and medicine not just at Yale but around the world.

This thematic approach is part of a new vision for the magazine as we embark on a redesign to give the print edition of *Yale Medicine* a livelier and more modern look. We will expand our news and feature section and some sections that have traditionally appeared in our print issue—faculty, alumni, and student news—will appear online only. As part of our redesign we'll expand our online edition with regular postings in between print issues. Our print issue will continue to appear three times a year, in winter, spring, and autumn.

We hope that you will enjoy the new format of the magazine as we continue to bring you news of the School of Medicine community.

John Curtis

Editor

SECOND OPINION BY SIDNEY HARRIS



"YOU'VE BEEN TRADED TO THE RED SOX FOR AN
OUTFIELDER WITH A BROKEN ARM."

As health reform looms, a new leader at YMG

Paul Taheri sees centralization, standardization, and primary care as keys to the practice's success.

In March Paul Taheri, M.D., M.B.A., left Shelburne, Vt., a suburb of Burlington, for a new job in New Haven. Taheri, who had led the University of Vermont Medical Group since 2007, arrived to take over as CEO of Yale Medical Group (YMG). He moved from overseeing a

Paul Taheri began his new post as CEO of Yale Medical Group in March. He came to Yale from the University of Vermont, where he prepared the medical practice for the future of health care reform.

500-physician multispecialty group to leading one that has more than 1,000 physicians, mostly specialists.

"Yale is a bigger enterprise," said Taheri, who will also serve as deputy dean at the School of Medicine. Yale's location on an axis that includes such powerhouse medical centers as New York City and Boston places it, Taheri said, in the "hotbed of innovation and delivery."

That said, Taheri's move to New Haven comes at a time of imminent change in medicine both nationally



et cetera ...

and locally. President Obama's health care reform takes effect next year, with anticipated cuts in reimbursement from Medicaid and Medicare as well as other changes in the financial model of medical practice. Many in medicine foresee a shortage of physicians at the same time that thousands of new patients are expected to enroll in Medicare. The shortage of primary care doctors is of particular concern, Taheri said. "The general trend in American health care is placing a greater emphasis on primary care," he said. "We have to figure out how to either integrate or build relationships with primary care providers. I suspect that is where the practice will grow."

The clinical practice at Yale has seen major expansion over the past decade—the size of the clinical faculty has grown; clinical revenues have nearly doubled; and clinical programs have expanded in breadth and depth—but leadership at the medical school and within YMG see a need for a more centralized and unified physician group practice.

Taheri agrees, and achieving that is among his immediate priorities. "Figuring out how we govern ourselves will be a very big issue," he said. "Ultimately things need to come to some pinnacle and have decisions made by the group."

He's also hoping to continue the move toward standardized customer service throughout the medical group's practices. "How does registration work? How are patients brought to the room? What person is doing what in the clinic?" he said. "Whether they go to New London or Bridgeport, it should be the same experience. There are huge benefits to standardization."

Taheri was credited with preparing the medical practice at UVM for the future of health care reform both financially and operationally. He established the Fletcher Allen Center for Health Care Management to provide business training for physicians,

nurses, and administrators; and he led the UVM Medical Group Revenue Department to achieve national ranking among its peers.

YMG, he said, is well positioned to weather coming storms, Taheri said. "You have world-class faculty," he said. "You have a great brand. You still have leverage with the payers. As long as we are data-driven, thoughtful, methodical, we can manage the changes and balance all the missions of the enterprise, and come out more able to bear risk."

Taheri succeeds David J. Leffell, M.D., director and later CEO of YMG, who led the transformation of YMG over the past 15 years while continuing to direct the Section of Dermatologic Surgery and Cutaneous Oncology. Leffell's leadership has advanced YMG's reputation for quality of care and service, and he spearheaded many initiatives, including the branding of the clinical practice under the name Yale Medical Group; establishing first-rate billing, collections, and compliance functions; and selecting Epic as the medical center's first integrated electronic health record. Michael Berman, M.D., who directed the initial restructuring of the practice, oversaw its operations as interim director and CEO during the past year.

—John Curtis

HEALTH AND FAT'S EXCESS ENERGY

Yale scientists have found that excess energy is packaged into fundamentally different fat deposits, which are associated with many health problems linked to being overweight.

"The cell's inability to process all the excess energy—not the accumulation of fat itself—is what causes most health problems," said Tobias Walther, Ph.D., associate professor of cell biology and senior author of the study published online February 13 in the journal *Developmental Cell*. Health problems start when molecules linked to fat synthesis overwhelm cells, rendering them unable to store energy as fat. That storage failure leads to inflammation, insulin resistance, fatty liver, and other problems associated with obesity.

Exploring ways to prevent failure of the cells' ability to accommodate excess energy may be a more effective way to tackle the health problems associated with obesity than simply trying to get rid of fat itself, Walther said. "Historically, concentrating on just burning fat has not worked too well," he said.

—John Curtis

PREDICTOR FOR INPATIENT CARE

Though elderly people with heart failure often enter the hospital over and over, it's hard to estimate a specific individual's risk of landing there. One low-tech way may be to check gait speed.

Sarwat Chaudhry, M.D., associate professor of medicine, isolated health factors in elderly heart failure patients that were likely to precede hospital admission. Weak grip strength and slow gait, she found, were comparable to chronic kidney disease and diabetes for predicting admission.

The results appeared in the *Journal of the American College of Cardiology* in January.

Her predictors make sense, says Chaudhry: Gait speed requires the smooth function of several organ systems, and is also the single best measure of frailty in the elderly. While it's important to keep track of chronic diseases, she added that measuring an elderly person's general functioning is also important: "Physical function turns out to be a simple and accessible marker of overall health."

—Jenny Blair

When viewing their own possessions, hoarders' brains light up under fMRI

In the spring of 1947, two brothers named Homer and Langley Collyer were discovered dead in their Harlem brownstone. To reach them, police had to make their way through a barricade of 140 tons of treasure and garbage—including dress dummies, bales of newspapers, and the chassis of a Model T—that Langley had collected over decades.

Compulsive hoarding is a behavior both fascinating and tragic. Hoarders' penchant for accumulating innumerable but often worthless objects can disrupt careers, break up families, and even kill. And there are countless cases less famous than the Collyers'. In the reality television show *Hoarders*, people display blithe indifference to the mounds of belongings in their houses—yet grow panicky when faced with discarding them.

That peculiar combination of nonchalance and anxiety about possessions, which David Tolin, Ph.D., adjunct associate professor of psychiatry, calls the “two basic head-scratchers” of hoarding disorder (HD), has now been captured on functional magnetic resonance imaging (fMRI) of the brain.

Tolin and his colleagues asked three groups of people—HD patients, obsessive-compulsive disorder (OCD) patients, and healthy controls—to bring in a pile of junk mail from home. Each piece was photographed, as were pieces of mail supplied by the lab. As the subjects lay in an MRI machine, they viewed photos of their own and the lab's mail, then decided whether each item should be kept or shredded.



Compared with the other groups, HD patients experienced abnormally low brain activation in the insula (a structure within the cerebral cortex) and in the anterior cingulate cortex (ACC) when they assessed the experimenters' possessions. By contrast, those same brain regions lit up in a hyperactive pattern when the HD patients assessed their own possessions. (Perhaps unsurprisingly, the HD patients chose to shred fewer personal items than did members of the other groups.) The results were published in the August 2012 issue of the *Archives of General Psychiatry*.

“That biphasic abnormality maps on really well to some of the clinical puzzles that we have in hoarding,” said Tolin, who works with HD patients as director of the Anxiety Disorders Center at Hartford Hospital’s Institute of Living, and who has appeared as a guest expert on *Hoarders*. “You can see that flip-flop occurring even clinically.”

While HD has long been considered a type of OCD, Tolin’s results add to a growing body of evidence that it is a distinct disorder. “The more people we talked to who had hoarding problems,” Tolin said, “the more skeptical we became that this had anything to do with OCD.” In a previous study, he found that fewer than one in five hoarders meet the *Diagnostic and*

BETTMANN/CORBIS
The world's best-known hoarders were the eccentric and reclusive Collyer brothers, Langley and Homer. When they were found dead in their New York City brownstone in 1947, they were buried amid 140 tons of junk. Yale scientists have captured on fMRI some of the brain activity associated with hoarding.

Statistical Manual of Mental Disorders (DSM) criteria for OCD.

In fact, HD may bear some relation to autism and anxiety disorders. The insula and ACC help a person decide whether an object is relevant to him or her; and HD patients’ low level of activation in these regions while viewing experimenters’ possessions is similar to the reaction of autistic patients to human faces. On the other hand, the hyperactive response echoes patterns seen in anxiety disorders. That, too, makes clinical sense: If every item seems relevant, then trying to decide which ones to throw away can be overwhelming.

HD will be included as a separate disorder in the upcoming fifth edition of the DSM, psychiatry’s bible. In the meantime, Tolin cautions that abnormalities in brain MRIs don’t mean that HD is untreatable. “Regardless of what’s going on in the brain,” he said, with appropriate treatment “people can overcome hoarding. They can get better.”

—Jenny Blair

Two key genetic mutations open new pathways to treating meningioma

Murat Günel, M.D., HS '98, can now look at the MRI of a patient with meningioma and tell with almost complete certainty which genetic mutation is causing the tumor, based solely on the tumor's location in the brain. Moreover, in time he may be able to cure the tumor without ever wielding a surgical blade.

Whereas most tumors contain a dizzying array of garbled DNA and broken chromosomes, making it difficult to target any single molecular abnormality for therapy, Günel's group found that meningiomas—which arise from the membranes covering the brain and are the most common form of primary brain tumor—feature only one or sometimes two key mutations in just five genes. What's more, these mutations are closely tied to the biology of the tumors, including their location and malignant potential, as reported in the March 1 issue of *Science*. These findings, said Günel, the Nixdorff-German Professor of Neurosurgery and professor of neurobiology and of genetics, can point the way to more straightforward treatment for meningiomas, which presently affect about 170,000 people in the United States.

Although 90 percent of these tumors are histologically benign, they sometimes require surgical treatment because they can invade such critical neurovascular structures as the optic canal. The 10 percent of meningiomas that are malignant also require surgical removal, as no medical therapies are currently available.

The culprits in about half of all meningiomas are mutations in the tumor suppressor gene neurofibromin 2, or *NF2*. Until now, however, the mutational causes of the other half of meningiomas remained a mystery.

To crack the case, Günel and his colleagues scoured meningioma exomes using whole-exome

sequencing technology developed at Yale. Their search turned up four new genetic culprits. Two of the mutated genes, *SMO* and *AKT1*, have been implicated in other cancers, including basal cell carcinoma and medulloblastoma. Another gene, *KLF4*, maintains embryonic stem cells and can prevent their differentiation. *TRAF7*, the fourth gene identified, occurs in about a quarter of all meningiomas but had not been previously linked to cancer.

The scientists found that these genetic defects do not run in the same circles. Rather, they are mutually exclusive of *NF2*, the suppressor gene, and sometimes even of one another. In about a third of the defects, the researchers found, *TRAF7* mutations worked in tandem with either *KLF4* or *AKT1* mutations.

Günel's group also discovered that these distinct mutational groups can predict where the meningioma will appear and how it will affect the brain. For example, tumors with *NF2* mutations border the brain's hemispheres and feature genomic instability that can lead to malignancy. In contrast, tumors with *SMO* mutations arise from the skull base near the midline where surgery is difficult, but they show a stable genetic profile that suggests they will remain benign. "One of the next steps is to perform clinical trials to see if we can cure these meningiomas with targeted therapies," said Günel.

These findings represent a breakthrough in treating meningiomas and also malignant brain cancers. Günel believes that malignant tumors are basically conglomerations of the different individual types of cells that form benign tumors. "If we have the drugs to attack all of those subpopulations, then curing a malignant tumor is not going to be different than curing a benign tumor. The problem is that we didn't have the tools until recently to understand the complex genomic nature of these cancers and how we would attack all of the cancer at the same time."

—Kara Nyberg

et cetera . . .

WHY HEAVY DRINKERS CAN'T QUIT

The brains of heavy drinkers, Yale scientists reported in the *Journal of Clinical Investigation* in March, are more receptive to a chemical byproduct of alcohol consumption that may make it hard to quit.

Fourteen drinkers—half had had at least eight drinks a week, including four drinks per occasion once a week, and half had had fewer than two per week—were given acetate. The liver normally converts alcohol to acetate, which the brain uses for fuel and may come to prefer over blood sugar. That in turn may promote dependence, because people who stop heavy drinking lose not only the alcohol itself but also the acetate.

"There may be ways to support early sobriety with acetate or drugs that mimic some effects of acetate, and we need to investigate that with respect to effectiveness, safety, cost, and practicality," said senior author Graeme Mason, Ph.D., professor of diagnostic radiology and psychiatry.

—John Curtis

MAKING AN OLD BRAIN YOUNG

Yale scientists have reversed a molecular switch that helps the brain make the transition from teenager to adult. They reported on March 6 in the journal *Neuron* making an adult mouse brain youthful, which promoted learning and healing.

Scientists have long known that adolescent brains are more malleable—youngsters learn languages more quickly and recover faster from brain injuries. The Yale team found that without this molecular switch—the Nogo Receptor 1 gene—juvenile levels of brain plasticity lasted into adulthood. When researchers blocked this gene in adult mice, they found that the mice recovered from injury as quickly as adolescents and mastered complex motor tasks more quickly than adults with the receptor gene.

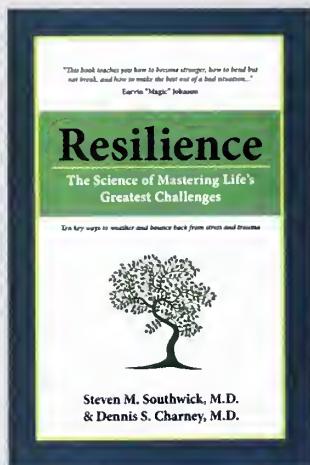
"It suggests we can turn back the clock in the adult brain and recover from trauma the way kids recover," said senior author Stephen Strittmatter, M.D., Ph.D., the Vincent Coates Professor of Neurology and professor of neurobiology.

—J.C.

How to bounce back from trauma

Two psychiatrists explore why some people are better able to endure trauma than others.

Rear Admiral Robert Shumaker survived eight years in North Vietnamese prisons by helping to develop a secret communication lifeline among his fellow prisoners. While most people undergo some form of trauma during their lifetime—though not always as harrowing as Shumaker's—some bounce back more easily than others.



For 20 years, Steven M. Southwick, M.D., and Dennis S. Charney, M.D., HS '81, have been studying the biology and psychology of post-traumatic stress disorder and depression. In their book *Resilience: The Science of Mastering Life's Greatest Challenges*, Southwick, the Glenn H. Greenberg Professor of Psychiatry and professor in the Child Study Center; and Charney, a former member of the Yale

faculty who is now the Anne and Joel Ehrenkranz Dean of the Icahn School of Medicine at Mount Sinai in New York City, explore how some people are better able to cope with stress.

The authors interviewed Vietnam-era POWs, Special Forces instructors, and civilians who have led productive lives after severe psychological trauma. "... the resilient people we interviewed," they write, "tended to use the same or similar coping strategies when confronted with high levels of stress." The authors identify 10 resilience factors including optimism and strong social connections; delve into the scientific and genetic underpinnings of these factors; and offer practical advice on ways to foster resilience in everyday life. While acknowledging that human resilience is a complex and dynamic phenomenon, the authors maintain that people can improve their resiliency. "Ultimately, resilience is about understanding the difference between fate and freedom, and learning to take responsibility for one's own life."

—Jill Max



Classics of Community Psychiatry: Fifty Years of Public Mental Health Outside the Hospital

by Michael Rowe, PH.D., associate professor of psychiatry; Martha Lawless; Kenneth Thompson, M.D.; and Larry Davidson, PH.D., professor of psychiatry (Oxford University Press) This collection, which focuses on the American experience, contains 45 texts exploring the history of deinstitutionalization and the community mental health center movement; the community support model; and current conceptualizations of recovery from mental illness.

Health Policies and Ethics: A Critical Examination of Values from a Global Perspective

by Roger Worthington, PH.D., M.A., assistant professor (adjunct) of medicine (general medicine); and Robert Rohrbaugh, M.D. '82, HS '86, FW '88, professor of psychiatry (Radcliffe Health). The authors compare and contrast ethical and policy issues from countries around the world, with a focus on the United States and countries in Africa and Asia. Worthington and Rohrbaugh address such issues as conflicts of interest; the balance between health care quality and cost; and the effects of geography and demographics on access to care.

Practical Social Skills for Autism Spectrum Disorders: Designing Child-Specific Interventions

by Kathleen Koenig, M.S.N., APRN, associate research scientist in the Child Study Center (W.W. Norton

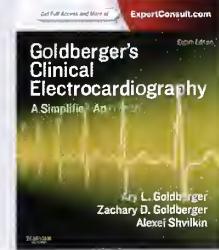
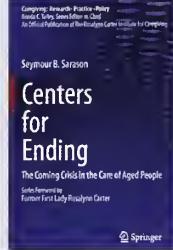
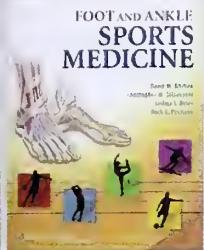
& Company) Koenig addresses ways to help children with autism spectrum disorders develop "social repertoires" that they can call upon in a range of day-to-day situations, from the classroom to the lunchroom to the family dinner table. The author uses case vignettes to illustrate the application of each intervention, suggests what to do when a child's response is inadequate, and offers a helpful guide to measuring the child's progress.

Foot and Ankle Sports Medicine

Edited by David W. Altchek, M.D.; Christopher W. DiGiovanni, M.D.; Joshua S. Dines, M.D.; and Rock G. Positano, M.P.H. '89 (Wolters Kluwer/Lippincott Williams & Wilkins) This book covers pediatric sports injuries, sport-specific injury prevention, rehabilitation, and shoe selection, in addition to such adult sports-related injuries as tendon disorders, trauma, and injuries to the hindfoot, midfoot, forefoot, and lower leg. More than 40 specialists contributed to this guide, including physicians, physical therapists, and trainers for major sports teams.

Principles and Practice of Geriatric Surgery, 2nd ed.

edited by Ronnie Ann Rosenthal, M.D., professor of surgery; Michael E. Zenilman, M.D.; and Mark R. Katlic, M.D. (Springer) The editors provide an overview of geriatric care in an evidence-based textbook that covers special issues which confront surgeons treating elderly patients, ranging from anesthesia complications to minimally invasive surgery. This updated edition presents new procedures, methods,



and information required to keep up with developments in the rapidly evolving field of geriatric surgery.

Centers for Ending: The Coming Crisis in the Care of Aged People by the late Seymour B. Sarason, Ph.D., professor emeritus of psychology (Springer) The author used his firsthand experience as both practitioner and patient in senior facilities to reveal professional and moral failings. Sarason discusses such issues as insensitive medical personnel, poorly trained nurses and aides, indifferent administrators, and a prevailing culture that is content with treating "bodies" instead of complete human beings. He argues that such deficiencies engender feelings of loneliness, isolation, depression, and dependency among residents of these facilities; and he recommends the formation of a presidential commission to confront the crisis.

Goldberger's Clinical Electrocardiography: A Simplified Approach, 8th ed. by Ary L. Goldberger, M.D. '74; Zachary D. Goldberger, M.D. '04; and Alexei Shvilkin, M.D. (Saunders) The authors provide the fundamentals of ECG interpretation and analysis in this cardiology reference text, which offers guidance on understanding rhythm disorders and their clinical outcomes; broadens mastery of the material with online-only self-assessment ECGs and review questions; expands clinical skills

via online clinical highlights and review questions; and includes diagnosis and management tips as well as extended coverage of difficult-to-classify heart rhythms.

Seldin & Giebisch's The Kidney: Physiology and Pathophysiology, 5th ed. edited by Robert J. Alpern, M.D., dean and Ensign Professor of Medicine; Michael J. Caplan, M.D. '87, Ph.D. '87, C.N.H. Long Professor of Cellular and Molecular Physiology; Orson W. Moe, M.B. (Academic Press) In this edition, previous chapters have been updated and new chapters have been added. The role of stem cells, the significance of cilia, and expansion of the section on pathophysiology are some of the updates incorporated in this text.

Meditations on the Good News: Reading the Bible for Today by Rev. Debra W. Haffner, M.P.H. '79 (Religious Institute Inc.) This book of 40 essays on Biblical verses is designed to introduce readers to positive messages in the Bible. The author highlights passages with inspirational and practical lessons to help lead a joyful life.

Madness & Glory: A Novel by Albert Rothenberg, M.D., HS '60 (Pegasus Publishers) This book follows Philippe Pinel, a French physician who pioneered the humane treatment of the mentally ill, and his patient in the Bicêtre asylum who learns of a plot against the leaders of the French Revolution—which puts both their lives in danger.

The descriptions above are based on information from the publishers.

The neurobiology behind our choices

When Ray Dolan, M.D., had to run an errand, he took a risk, did not feed the parking meter, and got a ticket for \$200. If he paid the ticket within 14 days, the fine print on the ticket informed him, he could cut the fine in half. Still he did nothing.

The parking ticket, said Dolan, the Mary Kinross Professor of Neuropsychiatry and director of the Wellcome Trust Centre for Neuroimaging at University College London (UCL), triggered a negative Pavlovian response associated with a hard-wired disposition not to act. Dolan's handling of the ticket was a case in point in his talk at the Yale/UCL Senior Scientist Lecture Series in March. The talk centered on his research into values, choice, decision making, and action.

Dolan described in neurobiological detail the interactions that occur in such regions of the brain as the orbital prefrontal cortex and the striatum when people are engaged in values-based decision making. "We have multiple systems controlling our behavior, and most of the time they are in alignment," he said. "So it's striking when they come into opposition. This, I believe, accounts for lots of everyday behaviors in which people react suboptimally."

—Jennifer Kaylin

Proposing new politics of medicine

The United States, said Helena Hansen, M.D. '05, Ph.D. '04, spends more on medicine than any developed country yet has poorer outcomes. Meanwhile, low-income countries like Cuba and India are improving health care.

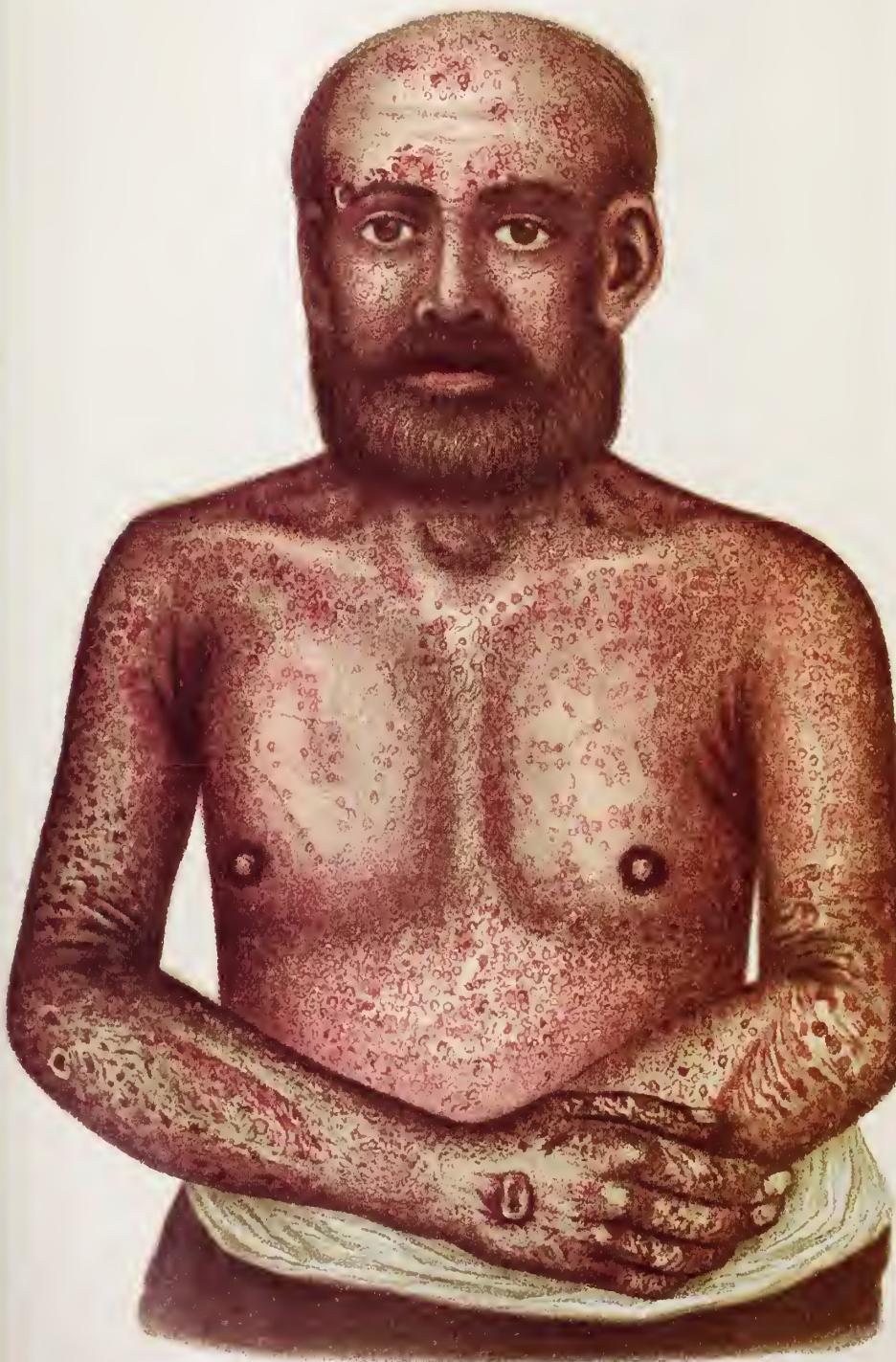
"What's missing?" asked Hansen, an assistant professor of psychiatry and assistant professor of anthropology at New York University, speaking to members of the Yale Global Mental Health Program in March. "We have technology that practitioners in other countries can only dream about. But we focus on eradicating the patient's acute symptoms, not on the social or institutional factors that led to them."

Calling for a "new politics of medicine," Hansen said that American clinicians need to look beyond the patient and focus on where patients live as well as their level of education, diet, and income level. Clinicians also need to engage in interdisciplinary collaborations with such community partners as urban planners, educators, and criminal justice leaders.

"Doctors need to prescribe structural interventions, so that ailing systems become the patient, not only the individual," Hansen said. "We need to push clinical professionals to think of themselves as agents for institutional change, social change, and policy change."

—J.K.

PLATE 12.



Universal dermatitis (Morris).

The world's medical heritage goes digital

The world's leading medical libraries make historic texts available online.

By Christopher Hoffman

It's 1909 and your child has diarrhea. The cure, according to that year's edition of the *Guide to the Clinical Examination and Treatment of Sick Children*, is opium.

"Opium is a valuable remedy in childhood," author John Thomson, M.D., writes. "It is chiefly of use in relieving pain and quieting the actions of the bowels."

Until recently, this window into early 20th-century pediatric medicine sat on a shelf deep in the stacks of the Cushing/Whitney Medical Library. Now the book is just a mouse click away through the online Medical Heritage Library, one of nearly 6,000 Cushing/Whitney rare books uploaded onto the site as of June 2012.

The Medical Heritage Library is part of an effort by Open Knowledge Commons, a digital curation collaborative—a network of librarians, universities, students, lawyers, and technologists—to create free digital libraries. The organization, founded in 2008, invited Cushing/Whitney and other leading medical libraries, including those at Harvard, Columbia, and the U.S. National Library of Medicine, to upload works into the site. The works will be available to historians, amateur scholars, laypeople, and anyone interested in the history of medicine. As of this spring, more than 40,000 works had been stored in

the library's virtual stacks, with more going online every day.

To avoid duplication, each library is assigned certain subjects. Cushing/Whitney's topics include surgery, pediatric medicine, gynecology, obstetrics, homeopathy, and phrenology, said Sarah McGlynn, M.L.S., the library's former preservation and collections management librarian. The eclectic collection includes textbooks, manuals, government pamphlets, self-help books, treatises on social issues, even novels and nonfiction—anything with a connection to medicine from the 19th and 20th centuries.

Yale's contributions include: *The Nightless City*, an 1899 "exposé" of Tokyo's then-red light district that could have doubled as a guidebook; *The Rules of Aseptic and Antiseptic Surgery*, by Arpad Gerster, M.D., a seminal work from 1888; and the 1877 *How to Teach According to Temperament in the School-Room and the Family*, which applies

phrenology—the belief that head bumps can be used as measures of personality and intelligence—to the hiring of teachers and instruction of children.

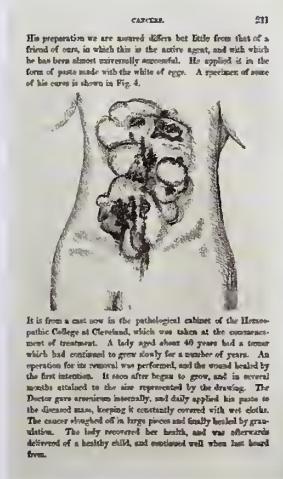
As the 19th century progressed, scientific medicine supplanted home remedies, quackery, and superstition. Melissa Grafe, Ph.D., librarian for medical history, said that while the practices of yesteryear may repel, they were on the cutting edge at the time. "You look back and say, 'Oh, my God, that's crazy,'" Grafe said. "But, perhaps 100 years from now, people are going to look at us and say, 'Oh, my God, that's a little crazy.'"

Grafe's favorite Yale contributions are 19th-century "sexual hygiene" books offering women and girls advice on everything from improving the complexion to contraception. McGlynn's best finds include a novel called *The Lunatic at Large*, with a whimsically beautiful cover; and a self-help book titled *Talks with Homely Girls on Health and Beauty*.

Scholars are experimenting with data mining and other mass information extraction techniques to determine how best to use the trove, said John Gallagher, M.L.S., deputy director of public services for Cushing/Whitney.

Digitizing the books is a laborious process, he said. "The scanning is the easy part." A variety of library staff is involved in the project, reviewing, selecting, and cataloguing books as well as proofreading scanned texts. Volumes must be in good condition for the digitization machine, which automatically turns and photographs their pages. Because 19th-century works were often poorly made and are disintegrating due to the high acid content of their paper, they are given priority.

An exhibit on display at the Cushing/Whitney Medical Library focuses on the digitization process and displays discoveries from the work. To visit the Medical Heritage Library, go to medicalheritage.org.



CANCER. 231

Its preparation we are assured differs but little from that of a friend of ours, in which this is the active agent, and with which he has been almost universally successful. He applied it in the form of paste made with the white of eggs. A specimen of some of his cures is shown in Fig. 4.

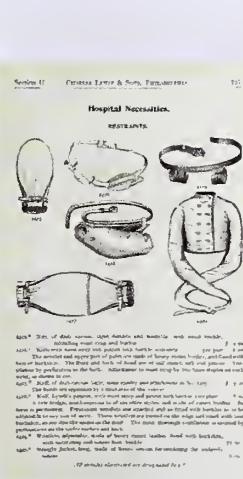
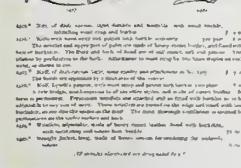


Fig. 11. COSTUME & EQUIPMENT FOR SURGEONS.



PREPARATIONS — INSTRUMENTS — SAWING. 133

It is necessary to give room for the operation. The basal artery lies near the surface, and may easily be compressed against the lumbar at any part of its course. Near the elbow it lies in front of the brachial arteries, but runs up obliquely towards the axilla, having the brachial in front of it, the biceps and coracobrachialis, and, behind it, the triceps with the insertion of the latissimus dorsi and teres major.

The patient is seated in a chair, or laid in a convenient posture, upon a table or bed. One assistant has hold of the fore-arm to support and steady it, while another grasps the arm with both his hands above the part to be operated on, and pulls back the ligaments as tight as possible.

FIG. 85. PREPARATION FOR AMPUTATION.

In the one to be performed, the surgeon, knife in hand, places his hand under the patient's arm, and holds the hand so as to lay over it towards himself, with the point downwards (see the position of the hands in Fig. 86, representing the amputation of the left arm).

FIG. 86.



operation on the left arm); and proceeds with his first incision, driving the blade backwards from bone to point, completely round the limb, merely cutting through the skin and superficial fascia. The instrument is then laid aside or handed to an assistant, and the surgeon loosened from the patient before proceeding to the exterior muscles with scalpel or bistoury. The skin is now firmly removed further up, and another incision made, in the



FIG. 87. A MANUAL OF OPERATIVE SURGERY. DR ANDREW DENTON, M.D., PROFESSOR OF ANATOMY AND CLINICAL SURGERY, AND ASSOCIATE PROFESSOR OF ORTHOPEDIC SURGERY, IN WESTERN RESERVE MEDICAL COLLEGE, AND PROFESSOR OF CLINICAL SURGERY IN THE NEW YORK ACADEMY OF MEDICINE, AND THE NEW YORK DEPARTMENT OF THE NEW YORK STATE BOARD OF REGENTS. 520 PAGES. CLOTH. \$1.00. LIPPMAN, BROWN.

MEDICAL/HISTORICAL LIBRARY

THIS PAGE Left, a page from *The homeopathic practice of surgery, together with operative surgery*, by Benjamin Hill, M.D., and Jason Hunt, M.D., published in Cleveland, Ohio in 1855. This image illustrated the case of a woman with a tumor. Hill was a professor of obstetrics and diseases of females, and professor of surgery at Western Homeopathic College, which he founded in Cleveland in 1850. From the same book, third from left, a chapter offered instructions on amputations.

Second from left, early in the 20th century, Charles Lentz & Sons of Philadelphia published a price list for surgical instruments, hospital supplies, orthopedic apparatus, and trusses, among other items. Right, a page from *The rules of aseptic and antiseptic surgery*; a practical treatise for the use of students and the general practitioner, by Arpad G. Gerster, M.D., published in 1892.



Killing Cancer's Seeds

A controversial theory focuses on identifying and treating so-called cancer stem cells within solid tumors. While doubters abound, some at Yale believe a revolution in cancer care may be in the offing.

By Marc Wortman

Illustrations by Sophie Casson

Hope crushed can be a terrible thing. Oncologist Alessandro D. Santin, M.D., sees that despair all too often. Santin, professor of obstetrics, gynecology, and reproductive sciences, typically treats ovarian cancer patients when their tumors have grown dangerously large and spread to other parts of their bodies. Most of these women undergo surgery first, then chemotherapy. After they have endured these complicated and painful treatments, though, often the most he can offer is a small measure of good news.

Nearly four out of five patients have no detectable disease left in their body; however, cancer will return in nearly 90 percent of the apparently “cured” women—the second time with a vengeance—and chemotherapy will no longer work. “There is very little we can do for them at that time,” Santin says.

Sitting in his School of Medicine office almost swallowed by the stacks of papers and journals that surround him, Santin speaks of the deceptively malevolent power of ovarian cancer cells to re-erupt after treatment. He has been studying the source of that power and thinks emerging insights reveal new possibilities for stopping it from killing women. “I’m targeting the cells that are resistant to treatment and therefore responsible for the cancer’s recurrence and the death of my patients,” he says. He has come to believe a very specific type of killer lies deep within tumors: cells that are not ordinary tumor cells.

“We are trying to identify a subset of cells that looks different, acts different, and reacts differently among cancer

cells. These are the cells you try to kill with anything,” but cannot, at least so far.

Santin’s research is among the most advanced efforts to translate the complicated biology of what some observers term “cancer stem cells” into novel treatments for one of the most aggressive and lethal forms of cancer. According to a controversial theory that is gaining wider acceptance among oncologists and cancer researchers, certain cells have a unique set of developmental differentiation and self-renewal powers—akin to stem cells that form tissues during embryonic development—needed to initiate tumors. According to this theory, tumors need these “cancer seeds” in order to spread through the body. Santin and a growing number of cancer biologists are also convinced that among the mass of tumor cells in an individual cancer, only a subset of tumor cells have the genetic endowment to resist treatment.

The idea that a separate type of tumor cell lies at the root of cancer completely reworks existing dogma about how cancers form, gain structure, and spread. The notion of a separate subset of cells within tumors, says Gil G. Mor, M.D., Ph.D., professor of obstetrics, gynecology, and reproductive sciences, who shares an office suite with Santin and also studies the role of ovarian cancer stem cells, marks “a big change in the concept we learned in biology as medical students. We were taught that tumors are a mass of identical cells.”

“This,” says Haifan Lin, Ph.D., professor of cell biology and of genetics, and director of the Yale Stem Cell Center, “is a paradigm-shifting idea.” He explains, “A small

number of cells are much more important within a tumor than others. These are seeding cells—cancer cells that are different from other cancer cells.” But Lin added, “cancer stem cells may not be responsible for all types of cancers.”

Thomas J. Lynch Jr., M.D. ’86, the Richard Sackler and Jonathan Sackler Professor of Medicine (Medical Oncology); director of Yale Cancer Center; and a specialist in lung cancer, considers that notion controversial but says, “There is no doubt that a population of cells is responsible for propagating metastases. There is no doubt we have to target them to halt the process.” Lynch questions their designation as cancer stem cells, but he is convinced that “for therapy to be successful, you have to target that population.”

While oncologists almost universally acknowledge that only genetically aberrant hematopoietic stem cells can generate blood cancers, including most leukemias, there is no definitive way to distinguish cancer stem cells in solid-tumor cancers. Some say that’s because the cells are not there. But Santin and Mor say that they have characterized traits of these cells, including unique surface proteins, in certain cancers that distinguish them from other cells within solid tumors. That characterization may provide targets for the development of new anticancer agents. Several efforts are now under way at Yale and elsewhere to find therapies that attack those so-called stem cells.

If the researchers succeed, a revolution in the way oncologists view—and more importantly—treat cancer may be in the offing.

Cancer’s seeds

Recent decades have brought enormous advances in knowledge of cancer’s often baffling biology. But despite huge investments in treatment that have drawn on those insights, including the introduction more than 30 years ago of commonly used platinum-based chemotherapeutic agents, the odds and length of survival for most patients newly diagnosed with advanced solid-tumor cancers have barely increased. Eventually, in most cases of ovarian cancer—as well as lung, colorectal, breast, pancreatic, brain, and other solid organ-tissue cancers—the malignancy recurs after treatment, and that very often presages death.

Mainstream cancer biology points to tumor cells that escape even the most powerful targeted treatments as the culprits in cancer recurrence. Most oncologists believe that

cure rates would rise if it were possible to improve the newer agents’ targeting accuracy or increase the potency of chemotherapy agents without putting the patient’s life at risk. But the cancer stem cell theory puts treatment resistance and cancer recurrence in a very different light. It isn’t that a few cells hide out only to proliferate anew; it’s that certain cells have a genetic endowment that resists chemotherapy and enables them to regenerate tumors and spread the cancer.

“There are definitely cancer cell types that can initiate tumors and some that do not,” says Don Nguyen, Ph.D., assistant professor of pathology, who studies how lung cancer metastasizes, “and the cells that form tumors may be unique or more frequent depending on the cancer type.”

That opinion contrasts with traditional models of cancer biology. According to the most widely held view, malignant cells have mutations that make them genetically unstable. They accumulate further mutations and evolve into tumors that grow rapidly, encourage blood vessel formation, discourage immune responses, metastasize, and resist treatment.

Mor finds this model of malignancy “oversimplified.” The cancer stem cell model posits that rather than being made up of identical cells, the tumor is composed of genetically and functionally different cell types. Furthermore, within the tumor there is a hierarchy. “Only these mother cells can give origin to cancer cells and all the cells in the tumor, including the blood vessels to nourish the tumor,” Mor says. “We have isolated the cancer stem cells and we can recreate the complexity of the human tumors in the mouse. That only happens with the cancer stem cells.” He hopes to test therapeutic agents designed to treat recurrent forms of the disease in ovarian cancer patients. These advanced tumors appear, he says, “to be a different monster altogether” from the primary untreated cancer; and require “a completely different approach” to target resistant cancer stem cells as well as the other non-stem cells that make up a tumor.

Lin agrees. He expects that new drugs specifically engineered to seek out and kill cancer’s seeds will stop at least some aggressive chemotherapy-resistant cancers. “The key is to find what is specific and different in cancer stem cells. That becomes their Achilles’ heel,” he says.

But the most basic questions about the biology of cancer stem cells await answers because the existence of uniquely potent tumor-initiating cells with stem cell-like characteristics remains unproven.

Where cancer comes from

The cancer stem cell theory arose out of a paradox observed in certain cancers in laboratory studies. Tumor cells—even large numbers of them—may fail to generate new tumors when transplanted into immunodeficient laboratory mice. At the same time, other tumor cells—sometimes just single cells—can generate new tumors physiologically identical to the parent cancer, and also spontaneously generate metastases.

In 1994 cancer biologists at the University of Toronto found that very specific human acute myeloid leukemia (AML) cells were needed to transmit the disease into immunocompromised mice. “In leukemia you can take out cancer stem cells and transplant them and create the cancer again,” says Lin. “Lots of leukemia cells cannot do that. Only leukemia stem cells can.” Evidence for the role of stem cells in other hematological malignancies followed. To cure AML patients, treatments require total destruction and replacement of the patients’ bone marrow to eliminate the cancer-causing stem cell component. Nine years after the Toronto discovery, however, the research focus began to shift from cancers of the blood to solid-tumor cancers. In 2003, University of Michigan researchers separated populations of what they said were rare stem cell-like cells from other cancer cells within specimens from human breast cancer tumors.

Since then scientists say they have characterized populations of cells resembling stem cells in many types of solid tumors through elevated levels of proteins typically found only on the surface of stem cell membranes. “There is a semi-consensus in certain cancers, probably not all of them, that stem cells exist,” says Joseph Schlessinger, Ph.D., chair and the William H. Prusoff Professor of Pharmacology.

The presence of such stem cells may explain a cancer’s ability to survive treatment. “A lot of drugs can kill regular cancer cells but not cancer stem cells,” says Lin. “They can evade every insult we throw at them.” Cancer stem cells, he believes, possess DNA repair mechanisms that allow them to resist chemotherapy. They also divide much more slowly than most cancer cells, making them less vulnerable to chemotherapeutic agents that attack fast-dividing cells. (Speed of division underlies the death of hair, nail, and certain blood cells during chemotherapy as well as the development of unbearably itchy skin and other chemotherapy-related side effects.) Moreover, studies indicate that when tumor cells die during treatment, they release

signaling proteins that may stimulate surviving stem cells to reproduce and differentiate into a new tumor. In effect, treatment may actually increase the proportion of the highly aggressive and resistant cancer stem cells within tumors, perhaps explaining why fast-growing deadly malignancies often follow therapy.

What matters then is not just how many tumor cells a cancer therapy eliminates, but also its capacity to kill the cancer at its source.

Attacking cancer at the root

Lin studies genes that he calls the master regulators—they control other genes in the genome and decide whether a cell becomes a neuron or a heart, kidney, or skin cell. Genetic switches normally turn off stem cells once they have completed these tasks—except for small numbers involved in renewing and repairing blood, skin, bone, certain cells in the brain, and membranes in the lung and gastrointestinal tract. Lin believes that the stem cell genes may mutate through environmental insults like exposure to sun, tobacco smoke, and carcinogenic chemicals, or through genetic machinery gone awry; become overactive; and reawaken their self-renewing powers. This time, though, they lead to cancerous overgrowth. The parent cells that gave life transform into killers.

In the lab Lin’s team can manipulate genes in a normal stem cell to turn it into a cancer cell. In humans, he says, no one knows exactly how a stem cell becomes cancerous. Despite limited insights into how cancer stem cells develop, he contends that it is possible to develop drugs against them.

However, some cancer investigators question the notion of targeting cells that are so poorly understood. Scott Kern, M.D., associate professor of oncology and pathology at Johns Hopkins University School of Medicine, argues that alternate theories could explain the distinct class of treatment-resistant, tumorigenic cells under study. Says Kern, who studies cancer genetics, “We all know that the cancer stem cell theory explains at least some leukemias and teratocarcinomas [germ cell tumors, mainly cancers of the testes]. Nobody has debated that, to my knowledge. It is the extension of the idea to the common solid tumors ... that we find worthy of debate.” Existing theories, Kern argues, could explain the stem cell-like characteristics scientists claim to

see in certain cell populations within tumors. He thinks that methods being used to identify cancer stem cells in a tumor represent “fuzzy math” that weights statistical results of studies to conform to a stem cell theory. And what some call a distinct class of treatment-resistant tumor-initiating cells could in his view just as likely result from cancer-causing genetic and environmental factors and physiological processes that encourage tumor growth. “Instead of chasing stem cell-ness,” he says, “you’re chasing an unknown.”

Definitive ways to distinguish cancer stem cells from normal ones have yet to emerge. That has not stopped cancer researchers from trying to identify biological markers by studying the differences between tumors that respond to therapy and those that resist. Patients with those markers that suggest a large population of cancer stem cells may benefit from more aggressive treatment. “The key,” says lung cancer biologist Nguyen, “is to identify these patients and get treatment to them as quickly as possible.”

For some cancers, skin cancer among them, the role of stem cells is a bit different. Douglas E. Brash, PH.D., clinical professor and senior research scientist in therapeutic radiology, and professor of dermatology and of genetics, has found large clones of mutant progenitor cells, or skin stem cells, on the order of 30 per square centimeter in sun-exposed adult skin. These cells possess a mutation in the p53 tumor suppressor gene, which Brash showed came from sun exposure. When later exposed to beach-trip levels of ultraviolet radiation, the mutated stem cells produce more of themselves. In skin and other solid tissues, these progenitors are not professional stem cells: when they divide, they choose randomly between acting like a stem cell or acting like a differentiating cell. Brash theorizes that these mutated cells lead to a form of cancer known as squamous cell carcinoma. He is trying to create a mouse model in which the mutated skin stem cells can be observed while they are progressing to cancer. Shrinking a tumor 99 percent with a hammer may not be as effective as altering the stem cell’s choices with a screwdriver.

Santin does not claim certainty that a subpopulation of tumor-initiating cells exist in all or even most cancers, but he does believe that they exist in therapy-resistant ovarian cancer.

Much of Santin’s workday is spent either with patients or down the hall from his office in the laboratory where he

and his colleagues are studying ways to kill ovarian tumor specimens enriched in chemotherapy-resistant cancer cells. During the past few years his laboratory team has published findings that *Clostridium perfringens* enterotoxin (CPE), a type of bacterial poison found in the intestine and responsible for foodborne illness and diarrhea in humans, may attack and kill only cancer cells possessing a specific protein called claudin-4 on their surface. Santin showed that the same protein can also be found on the surface of chemotherapy-resistant tumor cells.

When exposed to the bacterial toxin, the previously resistant cells die within minutes. “It’s hard to believe how effective the toxin can be against these biologically aggressive tumor cells,” he declares. Santin is now working with W. Mark Saltzman, PH.D., the Goizueta Foundation Professor of Biomedical Engineering and professor of cellular and molecular physiology and of chemical engineering, and chair of the Department of Biomedical Engineering, to engineer a small section of that bacterial toxin into a nontoxic form suitable for use as a drug and as a diagnostic tool. The researchers are infusing a fragment of CPE linked to a fluorescent dye that lights up when it binds to a cancer cell. Santin hopes that within the next two or three years he can test the modified enterotoxin as a diagnostic method for chemotherapy-resistant ovarian cancer and then also be able to use it to treat patients with resistant ovarian cancer.

His departmental colleague Mor is looking for unique variants of the stem cell surface marker protein known as CD44 that may allow him to differentiate normal stem cells from the stem cells of ovarian cancer. Mor has already identified markers he believes may be present only in therapy-resistant ovarian cancer cells and has begun using the markers to look for compounds that might kill the cancer cells. “In recurrent disease,” he says, “you need to treat the cancer with a completely different approach. We have been successful in killing the fast-dividing cells. In the next 10 years, the challenge will be getting at the roots of cancer.” Even those who have raised doubts about the existence of cancer stem cells can agree with Mor about that.

Marc Wortman, PH.D., is a freelance writer in New Haven.



Pharma and academia partner for better health

Yale joins forces with the pharmaceutical company Gilead Sciences to search for targets for new and improved cancer therapies.

By Kara Nyberg

Illustrations by Sophie Casson

In 2008 Ruth Halaban, Ph.D., began searching the DNA of melanomas in a quest for genetic clues to skin cancer. The obvious connection between sunlight, ultraviolet rays, and cancer, she said, had been determined through population studies. The genetic causal link remained to be discerned. Halaban hoped—naively, as it turned out—that with about 20 samples she could find a genetic anomaly that would provide that link.

But with the sequencing of each sample then costing \$2,500—and she also had to sequence a normal sample for comparison—the experiment grew costly. Funding from private foundations helped her launch the project, but Halaban, a senior research scientist in dermatology, soon realized she'd need far more than 20 samples. In the end, the cost of sequencing fell to about \$1,400 per sample, and Halaban sequenced almost 150 samples. Her findings led her to a gene called *RAC1*, which appears mutated in about 9 percent of melanoma tumors. She completed the research in 2012 thanks to a collaboration with Gilead Sciences, and her findings were published online in *Nature Genetics* in July of that year.

"We discovered that *RAC1* is a sunlight signature mutation," said Halaban. "You can say that this is the culprit. This is directly related to sunlight."

Halaban's findings are the fruit of a collaboration between Gilead and the School of Medicine that began in 2011. By studying the genetic and molecular mechanisms underlying different forms of cancer, Yale and Gilead scientists work together to pinpoint new molecular targets

implicated in cancer pathogenesis, and to develop agents designed to put a halt to the molecules' rogue activities.

Under an agreement with the School of Medicine, Gilead agreed to provide \$40 million over four years to support research to identify novel targets and new drugs for cancer therapy. The collaboration will continue, with evaluations after the fourth and seventh years, through 2021 with a total of up to \$100 million in funding over 10 years—the largest corporate commitment in Yale's history. As part of the agreement, Gilead has the option to license potential cancer therapies that result from the collaboration.

Although such collaborations are decades old, in recent years academia has sought new funding sources as the pharmaceutical industry seeks new research collaborators. The industry needs new drugs in its development pipeline, and researchers across the country worry about years of flat spending from the National Institutes of Health, sequestration—which mandates across-the-board federal spending cuts of 8 percent—and declines in funding of research from venture capital. Partnerships between universities and pharma also allow each party to leverage their respective strengths in research and drug development.

Tapping into the best minds

The Yale-Gilead collaboration relies on some of Yale's top scientific minds, technology investments at the West Campus, and the resources of Yale Cancer Center, the Cancer Biology Institute, and Smilow Cancer Hospital. "Through this



collaboration," says Howard Jaffe, M.D. '82, president and chair of the board of the Gilead Foundation, and a member of the Yale-Gilead joint steering committee, "we're tapping into some of the best minds on the planet who've done it before and are scientifically, technologically, and instinctively better than just about anybody else."

Indeed, the joint steering committee brings some of Yale's leading scientists and clinicians to the table to help select and nurture the Yale research projects that receive Gilead funding. Joseph Schlessinger, PH.D., chair and the William H. Prusoff Professor of Pharmacology, and director of the Cancer Biology Institute on the West Campus, chairs the six-member committee.

"When we find cancer targets that are new, we will work with Gilead on designing drugs, which they can then test in the clinic," said Schlessinger, whose studies of molecules involved in cell signaling led to the development of many cancer drugs, including two developed by his biotech companies. "This is a tremendous opportunity for Yale and Gilead."

The Yale half of the steering committee also includes Richard P. Lifton, M.D., PH.D., chair and Sterling Professor of Genetics, head of the Yale Center for Genome Analysis, and a Howard Hughes Medical Institute investigator; and Thomas J. Lynch Jr., M.D. '86, the Richard Sackler and Jonathan Sackler Professor of Medicine (medical oncology), director of the Yale Cancer Center, and physician-in-chief of the Smilow Cancer Hospital at Yale-New Haven Hospital.

Three accomplished Gilead scientists round out the steering committee—Jaffe; William A. Lee, PH.D., senior vice president of research; and Linda Slanec Higgins, PH.D., vice president of biology.

An old trend revived

The past two years have seen an increase in multimillion-dollar pharma-academia collaborations that focus on discovering drug targets. Notable partnerships include Pfizer and the University of California at San Diego; Sanofi-Aventis and Columbia University Medical Center; and Novartis and AstraZeneca and the University of Pennsylvania.

Since signing with Gilead in 2011, Yale has partnered with several other companies. December 2011 brought news of a collaboration with the Johnson & Johnson Corporate Office of Science and Technology to jointly fund activities at the Yale Molecular Discovery

Center on Yale's West Campus. In May 2012, Yale announced a new partnership with GlaxoSmithKline to identify promising protein-destroying drug candidates in a variety of therapeutic areas. And in February, Yale and AbbVie announced a new collaboration. AbbVie will provide \$14.5 million over five years to support research into the molecular, cellular, and genetic underpinnings of autoimmune and inflammatory diseases. In return AbbVie has an option to negotiate a license for any invention made through the collaboration.

In 2002 Yale and Pfizer began a collaboration that led to the creation of Yale's PET Center in 2007.

"The proximity of the clinical research unit Pfizer was building in New Haven made it ideal for Pfizer to partner with the Yale PET Center to achieve its goal of finding out whether the drugs they were developing were hitting the targets in clinical trials," said Roopashree Narasimhaiah, deputy director of corporate and foundation relations in the medical school's development office. Pfizer, the pharmaceutical company, contributed \$5 million to establish the center and provides \$2 million annually to support PET imaging studies of mutual research interest. In these studies Yale and Pfizer scientists have worked together to determine whether to pursue the development of certain compounds to drugs. "It was not a discovery partnership," said Narasimhaiah. "The aim was not to discover, but to validate compounds that Pfizer was making."

Such alliances between industry and universities may suggest a new trend; but as Jonathan Soderstrom, PH.D., managing director of the Yale University Office of Cooperative Research, explains, industrial sponsorship of academic research is not new. In fact, it is decades old. In 1982, Soderstrom said, Yale was already receiving almost \$4 million in industry-sponsored research. By 1994, that figure had swelled to almost \$18 million; the figures held steady between 2001 and 2009, with Yale averaging more than \$15 million per year in industrial funding.

Gilead, a company rooted in HIV and hepatitis research, also points to a long history of ties to academia. "We just celebrated the 25th anniversary of an interaction we've had with two universities in Europe that was basically the genesis of the HIV drugs we developed," says Jaffe. "We've always been of the mantra that Gilead itself is only capable of a very minuscule fraction of the potential for innovation in the world, and that



we can expand dramatically on that by partnering with the right academic institutions."

This recent spate of corporate agreements reflects a convergence of factors—advances in technology and a need to tap into academic research—that have opened the floodgates for academia-pharma partnerships. The prime force driving both academia and pharma to partner, however, is shrinking funding.

Creative solutions in tough times

Although the NIH budget doubled from 1999 to 2003, it has remained stagnant for nearly 10 years, topping out at \$30.6 billion for fiscal year 2012. Early this year the U.S. Congress passed a continuing resolution that maintained NIH spending at that level. As a result, ROI research grants from the NIH have failed to keep pace with biomedical research costs. Despite these years of flat funding overall, however, NIH grants to Yale have been increasing. In the fiscal year that ended in June 2011, Yale received almost \$340 million in NIH funding. While Yale in general has benefitted, some labs at Yale have lost funding, causing worry among scientists.

The outlook for 2013 is one of uncertainty. When Republicans and Democrats in Washington failed to reach a budget agreement early this year, sequestration took effect, with an 8 percent reduction in federal spending. A White House report issued last September projected an 8 percent cut in funding for science.

The pharmaceutical industry is likewise going through a difficult time. The cost of drug discovery keeps rising, while many of the blockbuster drugs sustaining big pharma are about to go off patent, with few potential all-stars waiting in the wings. The floundering economy means less venture capital for startup biotech companies, which big pharma has recently relied on to identify drug targets and jumpstart the development of therapeutic agents. Pharma's wellspring of research and development money is also beginning to slow to a trickle due to waning revenue growth, forcing the drug companies to look elsewhere for leads on drug candidates. Out of the search for potential fixes, academia and pharma have looked to each other's complementary strengths, recognizing that together they have the potential for much greater research capacity.

Schlessinger cautioned, however, that the collaboration should not be seen as a replacement for the NIH. Much of the cancer-related research typically supported by NIH grants, he emphasized, "do not fit the goals of the Yale-Gilead collaboration. The collaboration's goals are to identify genetic changes or other molecular alterations that take place in human cancers that can be used to develop novel targeted therapies, including small molecules, therapeutic monoclonal antibodies, or biologicals that selectively block cancer cell proliferation and/or stimulate programmed cancer cell death."

Although the monetary perks of academia-pharma collaborations are obvious—academia gets money for



health-related research and pharma has the chance to identify a blockbuster drug that stands to turn a handsome profit—there are other benefits. The two sides need each other.

"The reason taxpayers in this country support \$30 billion in biomedical research every year is because of the expectation that it is going to lead to an ability to improve human health," says Lifton. However, there is a catch-22. "We have almost no ability to make new drugs and pharmaceuticals in academia. We rely almost entirely on that happening in the private sector." Toward that end, he says, there needs to be a translation from basic science to clinical development of a drug.

"I have long felt that there's tremendous talent and depth of understanding of biology in academia, and tremendous talent and depth in chemistry in the pharmaceutical industry, and a very inefficient bridge between those two bodies of expertise that is necessary to translate basic discoveries into new therapies," says Lifton. "Unless we have really effective pipelines for communication between academia and industry, we're not going to achieve the realization of turning basic science discoveries into new treatments that are going to benefit the people who are funding the basic research—the taxpayers."

To facilitate new research—rapidly—the Yale-Gilead steering committee has streamlined the funding process. "If someone has an idea, they can bring it to the steering committee and it can be funded two or three days later," says Lynch. "Even in the best scenario, the NIH funds projects nine months

later from when you have your idea. So this really allows us to put resources to problems very quickly."

Another beauty of the Gilead partnership and others like it is that they not only foster collaboration between academia and pharma, they also encourage collaboration among different medical disciplines on the Yale campus. Under standard operating procedures, an individual investigator receives an R01 grant to locate one small piece of the bigger cancer puzzle. For example, after a geneticist identifies a mutation underlying a particular cancer, advancing that information—and securing the funding to do so—sometimes gets a bit fuzzy.

"One of the real strengths for Yale has been the ability to build teams among clinical investigators who have access to patients and tissue samples; genomics investigators who know how to use those samples to discover genes that underlie specific forms of cancer; and biochemists and cell biologists who know how to go from specific genes and their mutations to assays to determine the consequences of the mutation that has been identified," says Lifton. "It's been really catalytic in terms of team-building across disciplines at Yale."

Halaban concurs. Every Thursday morning, she attends a melanoma board meeting with surgeons, pathologists, medical oncologists, radiologists, and researchers, where the discussion may turn to her Gilead-funded melanoma sequencing project. "To hear clinicians talking about genes, asking me, 'What did you find out about this gene or that gene?' is amazing," says Halaban. "These things were

not previously part of routine discussions. But now, the genetics of melanoma, currently mostly *BRAF* mutation status, changed it all.”

Yet another advantage is that the flow of cash promotes other non-Gilead-funded research. “They’ve infused resources that we may not otherwise be able to get, both to expand Yale’s genomic capability and to build other aspects of our infrastructure,” says Patricia Pedersen, PH.D., associate vice president for development and director of corporate and foundation relations, who played a key role in negotiating the collaboration. “Overall, the Gilead investment has increased our capacity, which was necessary to enable us to deliver results to them. In doing so, it has increased our ability to do more research, apply for more NIH grants, and get other funding.”

Finding the right partner

Although academia-pharma collaborations create synergy through aligned interests and can be highly productive, negotiating the terms of the relationship can be difficult. Each stakeholder holds different core values. Academia prizes public pursuit of knowledge, research grant funding, and intellectual freedom. “We all have academic calendars that we live on, meaning that we want to get promoted, and for our careers to advance so that we get more grants. That’s why we have a never-ending desire to publish,” says Lynch.

Both sides are working to eliminate such potential sources of conflict as restrictions on publication, problems with licensing rights, and conflict over control of the intellectual property. “You have to pick your partner well,” says Lynch. “It’s like a marriage. It’s really important that you select a company that fits the university.”

Indeed, Yale and Gilead have established strong links, productive collaboration, and common goals, and function as a harmonious couple,” Schlessinger said. Jaffe is an alumnus of the medical school; Gilead Sciences has previously funded faculty research projects; and the Gilead Foundation has supported a needle-exchange program and a mobile health care van in New Haven, so there is a history of camaraderie and collegiality. Adds Pedersen, “The company’s leadership is very academically minded.” For example, Gilead respects Yale’s mission to educate and disseminate information, placing few restrictions on the ability of Yale researchers to publish.

“I think that Yale can feel confident based on our long-standing relationship and Gilead’s track record of social responsibility. We have pioneered worldwide access to our HIV drugs, signing deals with 13 different generic manufacturers in India and having a no-profit cost,” says Jaffe. “We’re different. The major reason is that the people who created the value are still here. We’re all scientists or M.D.s. The core senior management of the company has been together over 20 years. We’ve been able to maintain a certain culture here, and I think that’s of benefit for the Yale group.”

Given the pressures on both pharma and academia, such alliances seem inevitable.

“I believe that there is great beauty in science, and that’s one of the compelling things about being a scientist,” said Lifton. “But in addition, there is the expectation that our research will ultimately contribute to improvement in human health. Today, that is almost always going to go through an industry partner. We need to recognize that that’s how our system works.”

Schlessinger agrees. “Many colleagues from other universities, as well as senior executives of major drug companies, emphasized to me the visionary aspects and the forward looking approach taken by the Yale-Gilead collaboration,” he said. “Moreover, as I believe that we are now in a golden age of drug discovery for cancer therapy and treatments for other diseases, we must come up with creative solutions to merge the best that academia and drug companies offer in order to develop new treatments that reduce the suffering caused by such devastating human diseases as cancer.”

Kara Nyberg, PH.D., is a freelance writer in Boulder, Colo.



Benjamin Polak



Richard Flavell



Ruslan Medzhitov



Lynn Cooley



David McCormick

New university provost named

BENJAMIN POLAK, PH.D., chair of the Department of Economics, the William C. Brainard Professor of Economics, and professor of management, was appointed provost of the university in December. He replaces Peter Salovey, PH.D., who can now focus on preparing for his next assignment as president—the role that he assumes on June 30. Salovey replaces Richard C. Levin, who is retiring after 20 years as president of Yale.

Polak joined the Yale faculty in 1994 and has made important contributions to decision theory, game theory, and economic history. He received the William Clyde DeVane Medal for undergraduate teaching and scholarship in Yale College in 2005 and the Lex Hixon '63 Prize for Teaching Excellence in the Social Sciences in Yale College in 2006. In 1998 Polak won both the Graduate Teaching Prize and the Graduate Advising Prize in the Department of Economics; he was honored again with the Graduate Teaching Prize in 2005.

Polak was appointed the inaugural William C. Brainard Professor of Economics in 2008, and two years later was appointed chair of the Department of Economics. A member of the University Budget Committee, Polak has a strong grasp of the university's budgetary and financial conditions. He has also served on the executive committees of the MacMillan Center and the Institution for Social and Policy Studies and as a fellow of the Whitney Humanities Center and a visiting instructor at the Yale Law School.

Researchers honored for immune system research

Two Yale School of Medicine researchers who study the immune system will share a 2013 Vilcek Prize for their long-standing and influential work on the innate immune system, the body's first line of defense against infection by bacteria and viruses. The prize went to **RICHARD A. FLAVELL, PH.D.**, chair and Sterling Professor of Immunobiology; and **RUSLAN M. MEDZHITOV, PH.D.**, the David A. Wallace Professor of Immunobiology.

Flavell, a native of England, and his Yale colleagues have discovered several important receptors responsible for innate immunity, and he has made major contributions to our understanding of how activation of the innate immune system triggers the adaptive system's more specialized immune response. Medzhitov, a native of Tashkent, Uzbekistan, immigrated to the United States in the early 1990s, having been inspired by the then-controversial theories of innate immunity championed by the late Yale immunobiologist Charles A. Janeway Jr., M.D. At the time, innate immunity was deemed unimportant and received scant scientific attention, but by 1997 Medzhitov, Janeway, and colleagues had identified a receptor of the human innate immune system that acts as a pathogen-detecting sentinel and activates adaptive immunity. In the wake of these findings, the study of innate immunity has seen explosive growth, and Medzhitov's work continues to have significant implications for autoimmune diseases, cancer, and other illnesses.

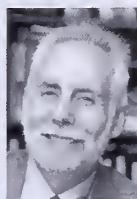
Immunologist receives inaugural prize

RUSLAN MEDZHITOV, PH.D., the David A. Wallace Professor of Immunobiology and a Howard Hughes Medical Institute investigator, has been awarded the inaugural Lurie Prize in the Biomedical Sciences from the Foundation for the National Institutes of Health. The award, which honors early-career researchers whose findings have advanced basic biomedical science, was given to Medzhitov for his groundbreaking discoveries about the workings of the innate immune system. A jury of scientists selected Medzhitov from a group of 154 nominees. The award, which carries an honorarium of \$100,000, will be presented to Medzhitov at a ceremony in Chicago on May 14.

Medzhitov came to Yale in 1994 as a postdoctoral fellow in the lab of Charles A. Janeway Jr., M.D. The two researchers made the breakthrough discovery that a human toll-like receptor, a component of the innate immune system, provides the adaptive immune system with the necessary information to create custom-made B and T cells that target specific bacterial or viral invaders through recognition of basic molecular patterns shared by microbial pathogens. Since then, toll-like receptors have become the subject of intense research activity in laboratories around the world.

Three faculty members received the distinction of Fellow from the American Association for the Advancement of Science (AAAS) in February for their efforts toward advancing science applications that are deemed scientifically or socially distinguished. **Lynn Cooley, PH.D.**, the C.N.H. Long Professor of Genetics and professor of cell biology and of molecular, cellular, and developmental biology; Residential College Associate Fellow in the Faculty of Arts and Sciences; and director of the Combined Program in the Biological and Biomedical Sciences, was honored for her contributions to developmental cell biology, particularly for her analysis of oocyte growth during *Drosophila* oogenesis. **Pietro De Camilli, M.D.**, FW '79, the Eugene Higgins Professor of Cell Biology and professor of neurobiology, was honored for contributions to the cell biology of the synapse, and the discovery of the role of phosphoinositide metabolism in the control of endocytosis. **David A. McCormick, PH.D.**, the Dorys McConnell Duberg Professor of Neurobiology and vice director of the Yale Kavli Institute for Neuroscience, was honored for contributions to the understanding of the cellular mechanisms by which the central nervous system generates states of activity; how these states are related to behavior; and how they are determined by the actions of neuromodulatory transmitters.

Three Yale faculty members received awards for distinguished service from the Connecticut Chapter of the American College of Physicians (ACP) at its annual meeting in Southington, Conn., in November. ACP represents more than 2,300 physicians,



Cyrus Kapadia

Paul Barash

Richard Belitsky

Kimberly Davis

Anne Eichmann

Jordan Pober

Deborah Proctor

Martin Schwartz

medical students, and residents practicing internal medicine and its subspecialties across the state.

The George F. Thornton Teaching Award, given annually to physicians in recognition of contributions to medical education and excellence in clinical teaching and motivational impact on students, residents, and colleagues, went to **Auguste H. Fortin VI, M.D., M.P.H.**, associate professor of medicine; and **Cyrus Kapadia, M.D.**, professor of internal medicine (digestive diseases). Fortin is director of the psychosocial curriculum for the Primary Care Internal Medicine Residency Program and director of communication skills education. He has a special interest in doctor-patient communication, the humanities in medicine, the psychosocial aspects of primary care, and professional burnout prevention.

As a gastroenterologist, Kapadia was instrumental in the development of techniques to identify precancerous changes in the colon. Kapadia directed the Internal Medicine Residency Program at Yale-New Haven Hospital from 1998 through 2011.

The 2012 Laureate Award was presented to **Stephen P. O'Mahony, M.D.**, assistant clinical professor of medicine, who launched one of the state's first hospitalist programs at Norwalk Hospital in 1999. He also began to use his expertise in computer engineering to integrate best practices and patient safety into clinical care through intelligent technology, decision support, and education.

Paul Barash, M.D., professor of anesthesiology, received the Ralph M. Waters Award from the Midwest Anesthesia Conference at its annual meeting in Chicago in November. Barash was recognized for his contributions to the development of anesthesia in learning, practice, teaching, and research.

Richard Belitsky, M.D., HS '82, FW '83, deputy dean for education, the Harold W. Jockers Associate Professor of Medical Education, and associate professor of psychiatry, was inducted into the University of Florida College of Medicine's Wall of Fame in October. The Wall of Fame award and recognition ceremony were introduced in 1991 to recognize outstanding alumni who have made contributions to medicine, government, education, and the community.

Michael G. Caty, M.D., recently named the Robert Pritzker Professor of Pediatric Surgery, is a noted pediatric surgeon whose clinical interests include neonatal surgery, thoracic surgery, intestinal motility disorders, pediatric surgical oncology, pediatric laparoscopy, and minimally invasive thoracic surgery. He joined the Yale faculty in January 2012, when he was also named the chief of pediatric surgery at Yale-New Haven Children's Hospital.

Kimberly A. Davis, M.D., is the president-elect of EAST (Eastern Association for the Surgery of Trauma), the largest trauma organization in the country. Davis will be installed as president in January 2014. Her term as president-elect began in January of this year.

Anne Eichmann, PH.D., has been appointed Ensign Professor of Cardiology. She is noted for her research exploring the factors that determine the location of cell growth in blood vessels and lymphatic vessels, as well as understanding how the vascular and nervous systems influence each other's growth and function. Eichmann came to Yale in 2010 as a professor in the Yale Cardiovascular Research Center at the School of Medicine.

T. Rob Goodman, M.D., vice chair of the Department of Diagnostic Radiology, was appointed the department's interim chair in January. Goodman will also fill the role of interim chief of diagnostic radiology at Yale-New Haven Hospital. His appointment follows the departure of James A. Brink, M.D., who will lead the department of radiology at the Massachusetts General Hospital. Goodman received his undergraduate degree from Dundee University in the United Kingdom and his medical degree from Cambridge University. He joined the School of Medicine faculty in 2003.

Jordan Pober, M.D. '77, PH.D. '77, FW '78, whose research focuses on the functions of vascular endothelial cells in inflammatory and immune responses and how inflammation and immunity affect vascular health and function, has been named the inaugural Bayer Professor of Translational Medicine. Bayer has established this professorship in recognition of the goals it

shares with the School of Medicine to improve the translation and delivery of fundamental scientific discoveries in human health. Pober serves as director of the Human and Translational Immunology Program and is vice chair of the Department of Immunology's Section of Human and Translational Immunology.

Deborah Proctor, M.D., professor of medicine (digestive diseases) and medical director of the Inflammatory Bowel Disease Program, received the Angel Among Us Award from the Middletown (Conn.) Elks at a meeting in November. Proctor donates much of her time to helping patients pro bono. She started the Free Flex-Sig screening program, and she and her husband have made more than 40 trips to Honduras, where they have sponsored more than 40 children in an orphanage.

Martin A. Schwartz, PH.D., recently named the Robert Berliner Professor of Cardiology, is a noted cardiovascular researcher whose studies of cell adhesion and behavior have led to new insights into atherosclerosis and heart disease. A professor of medicine (cardiology) and of cell biology, he is affiliated with the Vascular Biology and Therapeutics Program and is a member of the Yale Cardiovascular Research Center.

SEND FACULTY NEWS TO

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JOHN CURTIS



TERRY DAGRADI (2)

Seeing the unsung people “who care for us”

Medical students tell the stories of people who make their own lives better—a custodian, a bus driver, and a cook.

Anyone who's taken the Yale Shuttle to the VA Connecticut Healthcare System in West Haven has likely crossed paths with Chris Ferguson, one of the drivers on that route. What passengers may not know is that Ferguson is a graduate of Hamden's Paier College of Art who juggles his work schedule so he can indulge his passion for painting. Diners at Marigolds have probably encountered kitchen worker Lhamu Bhutia, without knowing that she's a refugee from Tibet whose family once owned a restaurant in Nepal. Pearl Murphy, known to all as "Ms. Pearl," is hard to miss. More than 6 feet tall, with an outsize

personality to match, she works nights as a custodian at the medical school—one of the two full-time jobs the single mother has held for 30 years.

Their stories, as told by three medical students, were the focus of an inaugural narrative project sponsored by the Program for the Humanities in Medicine with the aim of drawing attention to unsung heroes of the medical school. The students' narratives were published in a book titled *The Art of Caring*, and the students read from their narratives at a lecture in March. Ferguson and Murphy, along with friends and family, were in the audience for the lecture.

"We never pay attention to those individuals who care for us in environments such as this," said Thomas P. Duffy, M.D., professor of medicine (hematology) and director of the humanities program, at the lecture in the Cohen Auditorium. "It is those individuals who allow us to live the privileged lives that we live."

Over the course of three months first-years Matt Meizlish and Lorenzo Sewanan, and second-year Christine Sunu interviewed Murphy, Bhutia, and Ferguson and used their subjects' own words to describe their lives—from

TOP At a session in January, Alisa Anderson met with the students and described how the writing workshop would proceed. "One of the central focuses is that we interview people who often go unnoticed," she said.

MIDDLE Under the guidance of Alisa Anderson (second from left) medical students Lorenzo Sewanan, Christine Sunu, and Matt Meizlish gathered the life stories of three medical school workers and published the oral histories in a book, *The Art of Caring*, in March. The students read from their stories at a Humanities in Medicine lecture in the Cohen Auditorium.

BOTTOM Matt Meizlish (back row, far right) told the story, in her own words, of Pearl Murphy, a custodian who's worked at Yale for 30 years. At the humanities lecture in March, Murphy (seated, far right) was joined by her daughter Tennille Murphy, granddaughter Iyana Liburd, and (back row) George Keen, and Marquis McGraw.

From faltering English to leadership of a medical student group

One Saturday when he was 10 years old, Hao Feng arrived in the United States from Shijiazhuang in northern China. Feng, who then knew fewer than a dozen words of English, started school on the following Monday. Today he speaks English with no trace of an accent, but the linguistic and cultural barriers of those early years have informed his approach to medicine.

Feng, now taking a fifth year for research at the School of Medicine, was recently elected chair of the Council of Student Members (CSM) of the American College of Physicians (ACP). His role as a leader of the internal medicine interest group during his second year of medical school led to an invitation to join the ACP Connecticut chapter's Governor's Council. The organization's support for medical students so impressed him that he applied for a position on the CSM, which represents the interests of approximately 28,000 students. As chair, Feng will become a voting member of the Board of Regents, the ACP's main policy-making body. He is the only medical student in the country to hold that privilege. "I will represent the opinions and interests of medical students across the nation," he said. Those interests, he said, include funding for graduate medical education, the huge debt burden faced by medical students, and changes in the health care system.

Feng explored law, biotechnology, teaching, and engineering as an undergraduate at the University of California, Berkeley, and graduated with a degree in molecular and cell biology. Medicine—the only profession in which he felt he could make an impact on both individuals and on society—became his first choice for a career.

Feng is well on his way to gaining experience in these areas. As a Doris Duke Clinical Research Fellow, he

Hao Feng, a medical student taking a fifth year for research in photopheresis, was recently elected chair of the Council of Student Members of the American College of Physicians, where he will advocate on behalf of medical students across the country.



JOHN CURTIS

is studying the mechanism behind photopheresis, an immunotherapy treatment that is effective for cutaneous T cell lymphoma, transplant rejection, autoimmune disorders, and graft-versus-host disease.

Feng also volunteers at HAVEN, a free clinic staffed by Yale students under the supervision of faculty. His early struggles with English, he said, "gave me a respect and understanding of how important it is to accept diversity and keep in mind that other people have different beliefs." Most patients at the clinic are Hispanic. When a patient told him that he felt "ice in his veins," Feng probed further. Although he and his colleagues were unable to make a definitive diagnosis, they asked the patient to return for another visit. "There are certain things patients offer because they feel it's important, and if we ignore that aspect we may be missing a component of what they're trying to tell us," he said.

Feng is still trying to decide on a specialty. In addition to being both a physician and a researcher, he would like to advocate for better health care and influence health care legislation. He believes he will be able to fit it all in. "If you're passionate about something, you'll make time for it," he said.

—Jill Max

Ferguson's passion not only for art, but for the religion that anchors him spiritually, to Murphy's amusement at her granddaughter's attempts to teach her how to text, to Bhutia's family's odyssey from Tibet to India to Nepal to the United States. Guiding the students through the process was Alita Anderson, M.D. '01, who impressed classmates and faculty in her student days with her portrayals of the workers and patients whose life stories she had gathered. At her first meeting with the students in January, Anderson described the process that would unfold, starting with deciding whom to interview.

"In this project one of the central focuses is that we interview people who often go unnoticed and are doing the work of caring for this community—people who are custodians, groundskeepers, security guards—and play a big role in creating the community that you live in every day," Anderson told the students. Over the next weeks Anderson, who lives in Atlanta, discussed the projects with the students during weekly conference calls.

The narrative project was the brainchild of Duffy; Nancy R. Angoff, M.P.H. '81, M.D. '90, HS '93, associate dean for student affairs; and Forrester A. Lee, M.D. '79, HS '83, associate dean for multicultural affairs. "It was decided that we would call on Alita Anderson to be an artist and writer in residence," Duffy recalled. "Out of that has come this remarkable manuscript."

—John Curtis



Lowell rose through the ranks of community and regional public service—receiving training in tactical medicine as a hostage negotiator and serving as the city's police surgeon, then serving as the mayor's regional medical critical incident director—until Tom Ridge, the first secretary of the Department of Homeland Security (DHS), invited Lowell to Washington to be his senior advisor for medical affairs.

When Ridge came to St. Louis in October 2003 on a national tour of town hall meetings regarding the fledgling DHS, he had already heard of Lowell's accomplishments in the mayor's office and the St. Louis region. Lowell had spearheaded projects that coordinated the city's hospitals and its first-response agencies—a need that St. Louis recognized during the 2001 anthrax attacks that followed 9/11. As in every major U.S. city, telephone lines at hospitals, post offices, and police, fire, and public health departments were jammed with calls about the dangers of unidentified white powders.

"We were chasing our tail around and didn't have any good program to deal with it, so Mayor [Francis] Slay asked if I would build a matrix organization that integrated the region's medical and health assets with all the other forms of local government, including first response," he said.

Lowell led the effort to devise and implement the St. Louis Hospital Mutual Aid Agreement, which binds the hospitals of the metropolitan area's eight counties across two states (Missouri and Illinois) to share staff, beds, equipment, and supplies in the event of a disaster—natural, industrial, terrorist, or other.

"It was a big deal. Hospitals are big business competitors. They would just as soon put a stake in each other's heart as help one another. But we got every hospital in the region to say that in the event of a disaster, they'll help one another," Lowell said.

The agreement laid the groundwork for the St. Louis Area Regional

Jeffrey Lowell, a pediatric transplant surgeon, has advised the Department of Homeland Security on medical affairs, and laid the groundwork for regional responses to natural disasters in St. Louis.

Medicine, community, and justice intersect

Jeffrey Lowell helps first responders, government officials, and health providers to prepare for disasters.

A few years after Jeffrey Lowell, M.D. '85, joined the faculty at Washington University School of Medicine in St. Louis in 1994, the liver and kidney transplant surgeon transitioned from spending his protected research time in a lab to spending it in support of the community.

"Initially, I was interested in the intersection of medicine, community, and justice. Physicians and law enforcement are both involved in high-stakes, fast-tempo work, and I thought that medicine could contribute something," Lowell said.

Completing coursework and training at the St. Louis Police Academy in 2001,

Alum promotes chronic disease meds against inflammatory response

Statins. Metformin. Glitazones.

Fibrates. Familiar drugs to clinicians who treat patients with cardiovascular diseases and diabetes. They tamp down inflammatory overreaction to the disease. Could they also work in acute illnesses, even infections? David Fedson, M.D. '65, believes they could be useful against severe influenza, sepsis, trauma, and severe burn injury conditions that can also provoke a deadly inflammatory response. He believes this question is worth investigating and is waging a campaign to persuade researchers to do so.

Fedson, who is retired and lives in France near Geneva, Switzerland, where his wife works for the World Health Organization, is no stranger to public health. During medical school, he studied an experimental smallpox drug, but it turned out to be ineffective. In 1968, as a resident at Johns Hopkins, he participated in a research project in Kolkata (Calcutta) with investigators who were instrumental in developing oral rehydration therapy (ORT) to treat cholera. Later, he studied influenza vaccination at the NIH; and in 1976, while on the faculty of the University of Chicago, he organized the university's swine flu vaccination program. Six years later he published a recommendation that is now national policy: routinely offering influenza and pneumococcal vaccination to patients being discharged from the hospital. After 13 years on the faculty of the University of Virginia, where he was head of the Division of General Medicine, he moved to France in 1995 to become director of medical affairs at Sanofi Pasteur MSD, a vaccine company. There he continued his work on the epidemiology and cost-effectiveness of influenza and pneumococcal vaccination.

In the early 2000s, when H5N1 avian influenza emerged as a global public health threat, Fedson recognized

Disaster Medical System (NDMS) deployment to date. The *Washington Post* quoted officials and NDMS team leaders who strongly supported Lowell's assessment.

"I think a lot of my recommendations, if implemented, would have greatly improved our Katrina response," Lowell said.

Back at work in St. Louis, Lowell continues to serve his city as the mayor's senior medical advisor and director of the health department. As chief of pediatric transplant surgery at St. Louis Children's Hospital, he has performed a liver transplant on a 10-day-old patient, one of the youngest known organ recipients. He also served on one of the first teams to perform a transplant in which a piece of an adult liver from a living donor was transplanted into an adult recipient.

A commander in the U.S. Navy (reserve), Lowell was deployed to Central and South America on a humanitarian mission and in support of Operation Enduring Freedom to the U.S. Army hospital in Landstuhl, Germany.

"It's very rewarding, not only to be in health care and do something that people both need and otherwise wouldn't be able to have, but to do it representing your country. Taking care of injured soldiers and marines has been my greatest honor. I am deeply grateful for having that privilege."

—Sonya Collins

Response System (STARRS), which Lowell led the effort to create. The network coordinates the fire departments, police departments, public health agencies, governments, and NGOs of the two-state metro area for disaster preparation and response. Ridge was seeking just this type of multiagency coordination and integration for his new department that would bring together all or part of 22 federal agencies when he invited Lowell to meet with him in St. Louis.

"When Congress built this department, they didn't give him a top doctor, but almost everything that Secretary Ridge went to bed afraid of happening to America the next day had a medical or health implication," Lowell said.

Shortly after the meeting, Ridge asked Lowell to work for him in Washington, D.C., as his senior advisor for medical affairs. In Washington, Lowell defined the role of a permanent medical advisor. Later, he shared these recommendations in a 2005 House Subcommittee hearing. Largely based on these recommendations, DHS launched the Office of Health Affairs and the holder of Lowell's former position is now known as the DHS Chief Medical Officer and Assistant Secretary for Health Affairs.

Lowell's recommendations also appeared in a report to Ridge that outlined a strategy to realign and strengthen the *Federal Medical Response*, which was released in January 2005 and later made national news. Eight months later, his assignment in Washington over, Lowell was back home in St. Louis, when Hurricane Katrina put his evaluation to the test, requiring the biggest National

David Fedson is campaigning to encourage physicians to use familiar drugs to treat acute illnesses, including infections. Fedson is retired and lives near Geneva, Switzerland.

that vaccination alone would not save many lives—it would be difficult to produce and distribute in a short period of time. Like many researchers, he also wondered why the 1918 influenza pandemic had spared children but killed young adults. Clinicians and epidemiologists, he said, have noticed similar mortality differences in patients with other infectious diseases, in trauma victims, and in those with acute lung injury due to malaria and sickle cell disease. Children fare better than adults because their immune systems tend not to launch a damaging and sometimes fatal inflammatory response. No one knows why, but Fedson believes it makes evolutionary sense. “Children may be programmed to devote their energy to growth, not immune defense. Once they reach an age where they can reproduce, energy metabolism is redirected to immune defense,” he said.

Fedson recalled a study in which adult mice reacted more severely to liver injury than juveniles. When researchers treated adult mice with the diabetes drug rosiglitazone, the adults had less severe inflammation and better survival. In effect, he said, the researchers “rolled back the host response of the young adult to that of a child.” Similar effects on acute inflammation have been seen in studies of statins for heart attack victims and in studies of other immunomodulatory drugs in animal models of sepsis and influenza. In each instance, these drugs act to restore homeostasis. Equally important, they are produced as inexpensive generics and are available in any country with a basic health care system.



But much work needs to be done to determine whether these inexpensive drugs could be used routinely to treat patients with severe acute illness, including avian influenza. Unfortunately, said Fedson, research on the muted host response to disease in children, as well as on strategies to mimic this response in adults, has been neglected—especially by influenza scientists and immunologists.

Fedson has lectured at conferences, published in medical journals and the lay press, and contacted dozens of prominent researchers, journalists, and policymakers. Responses to what he calls his “cry in the wilderness” have been few and mostly noncommittal. He blames narrow specialization and a driving desire among biomedical scientists to explain mechanisms of disease rather than seek practical ways to manage it.

It doesn’t help, he adds, that most experts are not M.D.s, but Ph.D.s, who have a better understanding of the virus than the host response it can produce.

ORT for cholera, Fedson pointed out, was introduced at a time when researchers were trying and failing to develop an effective cholera vaccine. ORT treated the

host response—the diarrhea and subsequent dehydration—without attacking the infectious organism. The strategy has saved tens of millions of lives worldwide. Might a physiologic treatment of the host response to pandemic influenza do the same?

“Let’s see if we can use what we’ve already got,” Fedson said. “We don’t know whether these agents will work, but we can’t afford not to do the research to find out.”

—Jenny Blair, M.D. ’04

Familiar Faces

Do you have a colleague who is making a difference in medicine or has followed an unusual path since leaving Yale? We'd like to hear about alumni of the School of Medicine; Physician Associate Program; and the medical school's doctoral, fellowship, and residency programs. Drop us a line at ymm@yale.edu or write to Faces, Yale Medicine, 1 Church Street, Suite 300, New Haven, CT 06510.

Sherwin
Nuland

Brian Kobilka

Steven
Rasmussen

Vishal Agrawal



Rajesh Rao

1950s

Herbert Kaplan, M.D., HS '58, received the Presidential Gold Medal from the American College of Rheumatology in November. The award recognizes outstanding achievements in rheumatology over an entire career.

Harry C. Miller Jr., M.D. '54, received the William P. Didusch Art and History Award from the American Urological Association (AUA) at its 2013 annual meeting in San Diego in May. Miller was an editor of the *Centennial History of the AUA*, published in 2003.

Sherwin B. Nuland, M.D. '55, HS '61, clinical professor of surgery emeritus, received the Jonathan E. Rhoads Gold Medal "for distinguished service to medicine" from the American Philosophical Society at its November 2011 meeting in Franklin Hall in Philadelphia.

1970s

George J. Dohrmann, M.D., PH.D., HS '78, received the 2012 Career Achievement Award from the Chicago Neurological Society. Dohrmann was honored for expertise, knowledge, dedication, and recognition in neurosurgery and neurological research. Dohrmann is a member of the neurosurgery faculty at the University of Chicago Medical Center.

Richard Kayne, M.D. '76, received the Volunteerism and Community Service Award in November from the Connecticut Chapter of the American College of Physicians (ACP). Kayne's son, a survivor of osteosarcoma, attended Paul Newman's Hole in the Wall Gang Camp in Ashford, Conn., in 1995.

The next year Kayne volunteered as a counselor for the camp, and he became a member of its board of directors in 2002.

Barbara R. Pober, M.D. '78, M.P.H., has joined the founding faculty of the Frank H. Netter M.D. School of Medicine at Quinnipiac University in Hamden, Conn. Pober will teach genetics at the medical school, which will open this fall. Pober, professor of pediatrics at Harvard Medical School, is recognized as an international expert on Williams syndrome, a genetic disorder marked by cardiovascular disease, developmental delays, and learning disabilities.

Eddie Reed, M.D. '76, was named clinical director of the Intramural Research Program at the National Institute on Minority Health and Health Disparities (NIMHD) of the National Institutes of Health in January. Reed will oversee outpatient, inpatient, epidemiological, clinical, and laboratory-based investigations, and will build a multi- and interdisciplinary research program geared to translating basic research into clinical trials and interventions.

1980s

Brian K. Kobilka, M.D. '81, professor of molecular and cellular physiology and of medicine at Stanford University School of Medicine, won the 2012 Nobel Prize in Chemistry in October. He shares the prize with Robert J. Lefkowitz, M.D., of Duke University Medical Center, for their work on sensors lodged in the cell membrane known as G-protein-coupled receptors (GPCRs). Their work has contributed to improved understanding of the ways cells sense and respond to

their environment—almost half of all medications achieve their effects through GPCRs.

Lefkowitz began using radioactively labeled hormones to identify their receptors at Duke in 1968, and soon discovered the β -adrenergic receptor, which binds adrenaline on the cell surface and sets off a biochemical cascade inside the cell. Kobilka joined Lefkowitz's lab as a postdoctoral fellow in the 1980s.

In 2011, Kobilka's team captured an image of the β -adrenergic receptor at the moment that it is activated and sends a signal into its cell. In announcing the prize, the Nobel committee declared, "This image is a molecular masterpiece—the result of decades of research."

Steven Rasmussen, M.D., HS '83, known for his research in developing circuit-based neuromodulatory treatments for psychiatric disorders, has been named chair of the Department of Psychiatry and Human Behavior at the Warren Alpert Medical School of Brown University.

1990s

Brian Adams, M.D. '95, M.P.H., has been named interim chair of dermatology at the University of Cincinnati College of Medicine, where he completed his internship and residency. Adams joined the faculty of the Department of Dermatology in 1999 and serves as residency program director and director of medical student education.

Keith von Eigen, M.D. '90, M.P.H., PH.D., received a Laureate Award from the Connecticut Chapter of the American College of Physicians (ACP) in November. The award

is one of the chapter's highest honors for distinguished service to patients and the profession.

2000s

Vishal Agrawal, M.D. '02, FW '96, has been named president of the Harris Corporation's Health-care Solutions business. Agrawal has more than 15 years' experience developing strategies for and advising government and commercial health care organizations in North America. At the School of Medicine he was a Howard Hughes Medical Institute research fellow and in the Department of Molecular Biophysics and Biochemistry.

Rockman Ferrigno, M.D. '01, HS '04, has been named the interim chair of the emergency department of Connecticut's Bridgeport Hospital, where he has worked for seven years.

Rajesh C. Rao, M.D. '07, a vitreoretinal surgery fellow in the Department of Ophthalmology and Visual Sciences at Washington University School of Medicine in St. Louis, submitted one of 10 entries selected by the National Eye Institute, part of the National Institutes of Health, for its Audacious Goals challenge. Rao's proposal involves restoring vision in patients whose retinas have deteriorated from diseases like age-related macular degeneration.

SEND ALUMNI NEWS TO

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Margaret J. Albrink, M.D. '46, HS '47, FW '51, M.P.H. '51, died on December 23 in Morgantown, W. Va. She was 92. Albrink was one of the rare women of her generation to pursue a career in academic medicine and was the first researcher to establish the significance of serum triglycerides in coronary artery disease. Albrink joined the Yale faculty and served as instructor in medicine from 1952 to 1958. She became assistant professor of medicine in 1958. She and her husband, Wilhelm S. Albrink, M.D., joined the faculty of the West Virginia University School of Medicine in 1961.

Robert S. Briggs, M.D. '61, HS '65, died of complications of Parkinson disease in Litchfield, Conn., on November 25. He was 80. After residency and a fellowship in hematology at Yale, Briggs moved to Litchfield in 1965, where he joined an internal medicine practice.

Peter R. Cunningham, M.D. '49, HS '50, a retired pediatrician, died on October 11 in Johnson, Vt. He was 86. After graduation, Cunningham worked at the Navy hospital in Newport, R.I., before completing his residency in pediatrics. He had pediatrics practices in Guilford and Westville, Conn., for over 30 years before retiring to Vermont in 1986.

Herbert S. Harned Jr., M.D. '45, a retired pediatric cardiologist, died on January 7 at University of North Carolina Hospitals in Chapel Hill. He was 91. During his career Harned saw the development of diagnostic and interventional cardiology as it involved children; the near-demise of rheumatic fever; the development of surgery for complex cardiac conditions; and the creation of intensive care units for newborns and children.

Louis J. Kaplan, M.A., associate dean for government and community affairs during a turbulent era in the history of the School of Medicine, died on January 8 in Springfield, Va. He was 96. Kaplan's work helped

to establish the Connecticut Mental Health Center (CMHC) and the Yale Comprehensive Cancer Center.

Kaplan was hired as director of field services for the Connecticut Mental Health Association in 1956, where he worked with community members, government agencies, and other institutions. Kaplan also conducted a series of fundraising events with celebrities—including Vivian Vance, Lucille Ball's best friend in the *I Love Lucy* series, and baseball great Jackie Robinson—to raise public awareness of mental health issues.

Kaplan became the executive director of the association in 1966 and was recruited to the planning team for the new CMHC. The following year he became assistant to Dean Frederick Redlich, M.D. Not long after, the city of New Haven was engulfed in racial riots similar to those that swept other cities at the time. Kaplan worked with community representatives and government officials to quell the violence and initiate new programs to address many of the local issues that had sparked the unrest.

Leo D. Kellerman, M.D. '42, of Douglaston, N.Y., died of natural causes at the home of his daughter in Avon, Conn., on November 18. He was 95. The child of Russian immigrants, Kellerman practiced ophthalmology in Queens, N.Y., and volunteered his medical services in Kenya and the West Indies.

Arthur E. Laidlaw, M.D. '39, a retired pediatrician, died on November 19 in Cooperstown, N.Y. He was 97. Laidlaw served in the Army Medical Corps during World War II, returning to practice medicine in New Hampshire and upstate New York until his retirement in 1975.

Jack Love M.D. '58, PH.D., died on November 19 in Santa Barbara, Calif. He was 82. After his second year of medical school, Love received a Rhodes Scholarship and studied experimental

pathology at Oxford, where his thesis advisor was the Nobel laureate Sir Howard Florey, PH.D. Love served as a thoracic surgeon in the U.S. Army Medical Corps and later was a member of the surgery faculty at Johns Hopkins School of Medicine and the UCLA School of Medicine.

Ellen P. MacKenzie, M.D. '44, died on December 14 in Gretna, La. She was 92. MacKenzie opened her private practice in pediatrics in Gretna in 1949 and received psychiatric training at Louisiana State University School of Medicine and the Charity Hospital of New Orleans.

John H. Meyers, M.D. '50, a retired dermatologist, died in Glen Cove, N.Y., on October 6. Meyers was a captain in the U.S. Army Medical Corps and chief of dermatology at Fort Belvoir, Va.; he later served as an adjunct professor of dermatology at New York Polyclinic Medical School and Hospital before becoming chief of dermatology at the Glen Cove Hospital.

Richard A. Moore, M.D. '61, a retired pediatrician, died on November 26 in Cleveland, Ohio. He was 77. Moore was chief medical resident at Rainbow Babies and Children's Hospital in Cleveland before moving to Elyria, Ohio, where he practiced for over 40 years.

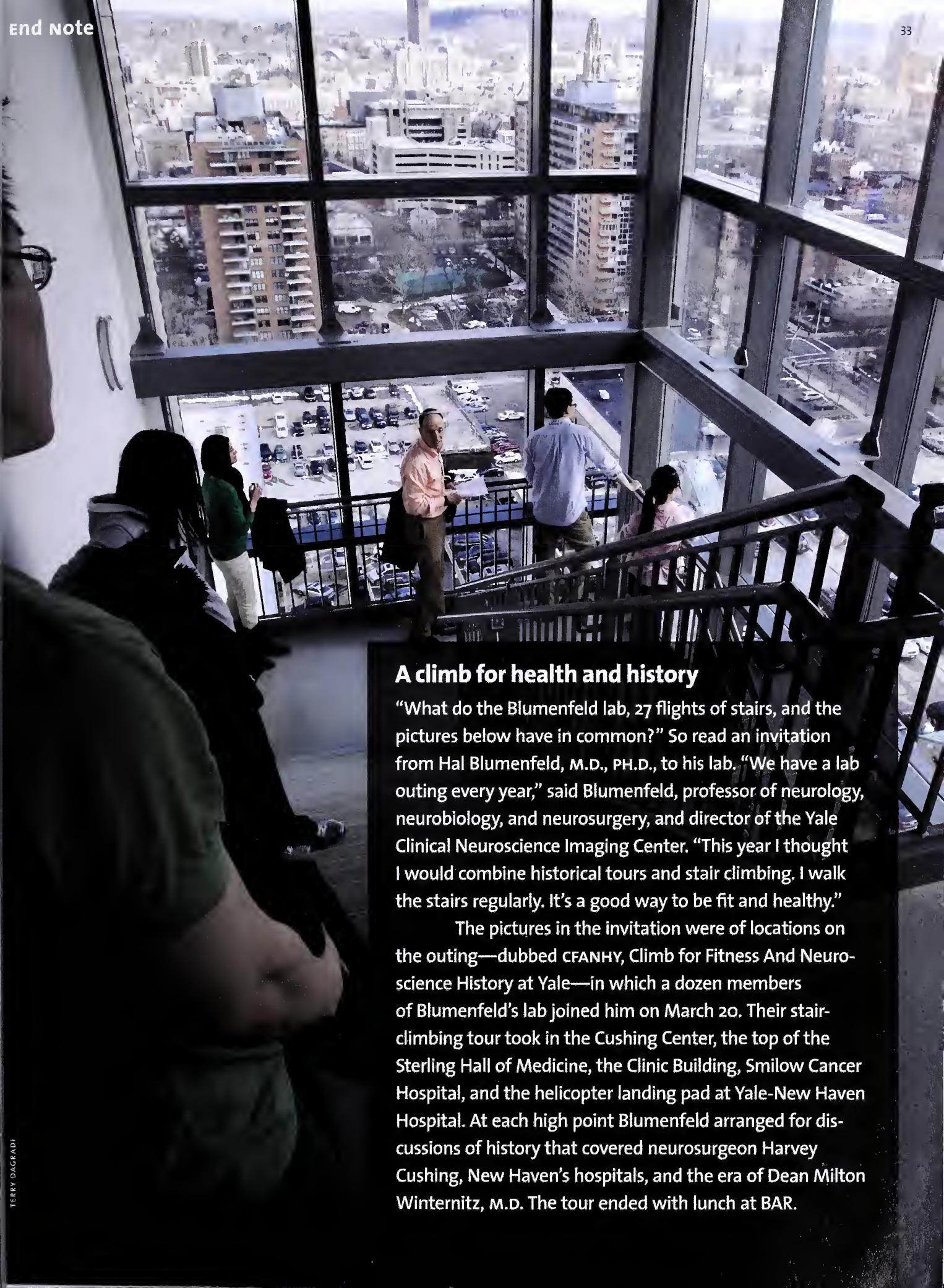
Edmund L. Piper, M.D. '49, died on October 30 in Exeter, N.H. He was 87. Piper practiced dermatology in the Portsmouth area for most of his career.

Giles Stevens Porter, M.D. '43, a retired general practice physician, died on November 23 in Eugene, Ore. He was 95. Porter served as a medical officer in the U.S. Navy in the Pacific Theater during World War II. After the war, he moved to Eugene to open a general surgical practice. Porter also worked as a trauma specialist in the emergency department of Sacred Heart Hospital in Eugene.

Frank H. Ruddle, PH.D., professor emeritus of biology, died on March 10 at Yale-New Haven Hospital. He was 83. Ruddle received his doctorate in zoology from the University of California, Berkeley, in 1960, and completed postdoctoral work at Glasgow University. In 1961 he joined the Zoology Department (later Biology, and then Molecular, Cellular, and Developmental Biology) and had a joint appointment in the Department of Human Genetics until his retirement in 2007. Ruddle served as chair of the Biology Department several times and held endowed chairs as the Ross G. Harrison Professor and the Sterling Professor of Biology. He was noted for his seminal studies on human gene mapping, his development of the transgenic mouse, and his work on homeobox genes, important regulators of development. His achievements were recognized by his election to the National Academy of Sciences, the Institute of Medicine, and the American Academy of Arts and Sciences. He was the recipient of many awards, including the Dickson Prize in Medicine, the William Allan Award of the American Society of Human Genetics, and the 2000 Connecticut Innovations Special Achievement Award. Ruddle served on numerous NIH review boards, was president of the American Society for Cell Biology, and was editor of such scientific journals as the *Journal of Experimental Zoology* and *Genomics*.

Arlene Sweedler, M.D. '58, died on December 17 in Urbana, Ill. She was 80. After a residency at Bellevue Hospital in New York City, Sweedler spent several years working in Japan. Along with her husband, Daniel, whom she met at the School of Medicine, she started a medical practice in Livermore, Calif.

SEND OBITUARY NOTICES TO
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A climb for health and history

"What do the Blumenfeld lab, 27 flights of stairs, and the pictures below have in common?" So read an invitation from Hal Blumenfeld, M.D., PH.D., to his lab. "We have a lab outing every year," said Blumenfeld, professor of neurology, neurobiology, and neurosurgery, and director of the Yale Clinical Neuroscience Imaging Center. "This year I thought I would combine historical tours and stair climbing. I walk the stairs regularly. It's a good way to be fit and healthy."

The pictures in the invitation were of locations on the outing—dubbed CFANHY, Climb for Fitness And Neuroscience History at Yale—in which a dozen members of Blumenfeld's lab joined him on March 20. Their stair-climbing tour took in the Cushing Center, the top of the Sterling Hall of Medicine, the Clinic Building, Smilow Cancer Hospital, and the helicopter landing pad at Yale-New Haven Hospital. At each high point Blumenfeld arranged for discussions of history that covered neurosurgeon Harvey Cushing, New Haven's hospitals, and the era of Dean Milton Winternitz, M.D. The tour ended with lunch at BAR.

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